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THE PRACTICE OF DENTAL HYGIENE IN CANADA

DESCRIPTION, GUIDELINES AND RECOMMENDATIONS

REPORT OF THE WORKING GROUP ON THE PRACTICE OF DENTAL HYGIENE

PART ONE

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PREFACE

The Working Group on the Practice of Dental Hygiene, the Sub-committee on Research and the Advisory Committee on the Development of Clinical Practice Standards for Dental Hygienists are part of a national program to develop guidelines and standards for dental health services. As well as national guidelines prepared by groups of experts in the field, studies are conducted with researchers on dental health issues. For further information on this program and copies of the reports, contact the Health Services Directorate.

This report, in a near to final draft, was sent to the provincial government dental directors for review and suggestions concerning errors and omissions. The chapters on history and regulation were sent to the provincial and territorial licensing bodies for dental hygienists for the same purpose.

A list of the four reports relating to the Working Group on the Practices of Dental Hygiene is included.

The chapter on human resources was reviewed by members of the Federal-Provincial Advisory Committee on Health Human Resources. I would like to acknowledge the professional assistance in revising this chapter from Lourdes Flor, Statistical and Economic Analyst, Health Human Resources Division in Health and Welfare Canada, Indra Pulcins, Research Associate, Division of Health Services Research and Development, University of British Columbia and Peter Paddon, Project Manager, Health Care Section, Statistics Canada.

This is a report to the federal government and does not represent a policy statement of the federal government.

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This is a report to the federal government from a working group of experts in the field. The report was approved by all members. It does not represent a policy statement of the federal government or of the national professional associations which nominated the members.

FOREWORD

In March 1981, the Department of National Health and Welfare formed the Working Group on the Practice of Dental Hygiene. It was established as part of a national program to develop voluntary guidelines for health services which along with other goals supports the development of young health professions in Canada.

The Working Group on the Practice of Dental Hygiene is composed of eight dental hygienists and five dentists, who were nominated by such professional groups as the Canadian Dental Hygienists' Association, the Canadian Dental Association, and the Canadian Society of Public Health Dentists. The members come from widely diverse backgrounds including private practice, community health, hospitals, and dental hygiene education and dental education. They also represent all geographic regions and both official Canadian language groups - English and French.

The terms of reference of the Working Group originally drafted within the Department of National Health and Welfare and revised by the members themselves are:

1. To examine current practices and available guidelines for the practice of dental hygiene.

2. To identify, conduct a literature review, and describe areas of practice of dental hygiene, including community dental health, private practice, institutional practice, education, and research.

3. To examine issues and data related to, and make recommendations about, dental hygiene human resources in Canada.

4. To review dental hygiene education, accreditation procedures and educational standards.

5. To determine a method for preparing statements of practice standards in dental hygiene.

6. To construct a model of dental hygiene practice.

7. To prepare guidelines for the practice of dental hygiene, make appropriate recommendations and submit a written report.

The working group met over a period of approximately six years. A report-drafting sub-group met periodically over the final three years. The Working Group recommended to Health and Welfare Canada that two additional committees be established: the Sub-committee on Research and the Advisory Committee on the Development of Clinical Practice Standards for Dental Hygienists.

The Sub-committee on Research, composed of seven dental hygienists and two dentist-researchers, was formed in 1982. The terms of reference were:

1. To identify and define appropriate research projects related to the deliberations of the working group and other topics related to dental hygiene.

2. To encourage and assist in the development of research projects on the topics identified and defined in Term of Reference #1.

3. To encourage dental hygiene participation in multi-disciplinary research projects as well as those identified as primarily involving dental hygiene.

4.To further develop a proposal for and implement a dental hygiene research conference for the fall of 1982.

5.To develop and publish guidelines to assist dental hygienists in their involvement in research.

In cooperation with the University of Manitoba School of Dental Hygiene, the Sub-committee on Research organized the first conference on dental hygiene research to be held anywhere

world-wide. The conference was held September 30 - October 1, 1982 in Winnipeg. Conference proceedings have been published and are available in either official language from the School of Dental Hygiene, University of Manitoba or the Health Services Directorate, Department of National Health and Welfare.

The Advisory Committee on the Development of Clinical Practice Standards for Dental Hygienists was established in 1983 when it became clear that the issue of practice standards was of such magnitude and complexity that it could not be developed adequately by the Working Group. The Advisory Committee includes dental hygiene and dental educators and researchers, practicing dental hygienists, and research methodologists. Its work is being undertaken with the assistance, under contract, of an experienced dental hygiene consultant and researcher. The terms of reference of the Advisory Committee on the Development of Clinical Practice Standards for Dental Hygienists are:

1. To formulate a methodology for developing standards of clinical practice for dental hygienists engaged in practice.

2. To include in the Committee membership: one dental hygienist presently engaged in clinical practice, dentist(s), and research methodologists, as well as a member of the Working Group on the Practice of Dental Hygiene.

3. To communicate on a regular basis with relevant groups and/or associations interested in standards of dental hygiene care (e.g. CDHA, CDA).

4. To provide the Working Group on the Practice of Dental Hygiene with the definitions and framework used by the Committee.

5. To provide the Working Group on the Practice of Dental Hygiene with the interim Committee reports for their suggestions and comments.

6. To submit the committee's report to become, along with a section of comments from the Working Group on the Practice of Dental Hygiene, Part Two of the Working Group on the Practice of Dental Hygiene report.

7. To develop and recommend to the Department of National Health and Welfare for approval the work statement in the contract with the researcher.

8. To monitor the work of the contracted researcher.

9. To consider the report as a report of the committee with the acknowledgement of the technical assistance of the researcher.

The results of the study to be completed in 1987 will be published in 1988 along with comments from the members of the main Working Group.

The present document, The Practice of Dental Hygiene in Canada, Part One represents the first comprehensive examination of dental hygiene practice in Canada. The objectives of this report are: to provide a basic description of the practice of dental hygiene in Canada, to identify major studies and references in this field, to describe major issues of current concern and to suggest principles for consideration in the future study of these issues, to identify other areas for further research and study, and to make recommendations.

The Canadian Dental Hygienists' Association published, with Health and Welfare funding, the full 12-page Executive Summary and Recommendations of the Working Group Report, Part One in its 1986 spring issue of The Canadian Dental Hygienist. The summary and recommendations were published in a bilingual centre pull-out format of the journal distributed in late March to all dental hygienists in Canada. Copies of the Executive Summary and Recommendations are available from the Health Services-Directorate, Health and Welfare Canada, Ottawa, Ontario, K2A 1B4, Canada. In the March 1986 issue of the Journal of the Canadian Dental Association, the six-page Executive Summary of the Working Group Report, Part One was printed. Health and

Welfare Canada provided the financial support to have the summary published in both official languages and the journal issue distributed to all dentists in Canada.

It is important to remember that the Working Group on the Practice of Dental Hygiene has no power to mandate change. Provincial licensing agencies, health policy advisers in governments, professional organizations, educators, researchers and individual dental hygienists and dental practitioners themselves have a more direct opportunity to effect change. Nevertheless, it is hoped that such organizations and persons will find that both Part One and Part Two of the report provide a useful and well-reasoned basis for review and consideration of possible changes in the practice of dental hygiene in Canada.

Since dental hygiene is composed primarily of women, while dentistry is composed primarily of men, much of the literature stereotypes the professions by referring to the dentist as "he" and the dental hygienist as "she". This report attempts to avoid sexual stereotyping of the two professions by using plural pronouns and verbs wherever possible.

TABLE OF CONTENTS

PAGE

PREFACE i
LIST OF MEMBERS, 1988
Working Group on the Practice of Dental Hygiene ii
FOREWORD iv
TABLE OF CONTENTS vii
LIST OF TABLES xi
LIST OF FIGURES xiv

EXECUTIVE SUMMARY AND RECOMMENDATIONS 1
1. Executive Summary 1
2. Recommendations 7
History 7
Human Resources 8
Education 8
Regulation 9
Dental Hygiene Practice 10
Influencing Factors 11

CHAPTER I INTRODUCTION 13

REFERENCES 16

CHAPTER II HISTORY 17

1. The Origin and Growth of Dental Hygiene 17
2. The Canadian Beginning 18
Ontario 19
Saskatchewan 19
Prince Edward Island 19
British Columbia 20
Manitoba 20
New Brunswick 20
Nova Scotia 20
Yukon 21
Alberta 21
Quebec 21
Northwest Territories 22
Newfoundland 22
3. Recent Developments 22
4. Professional Organizations 23
5. Landmark Events 23
6. Conclusions 25
REFERENCES 27

PAGE

CHAPTER III HUMAN RESOURCES 29

1. Introduction 29
2. Limitations and Sources of Data 29
3. Number of Dental Hygienists 30
4. Current Profile of Canadian Dental Hygienists 38
5. Number of Dentists 42
6. Additional Concerns Related to Human Resource Requirements in Dental Hygiene 45
7. Conclusions 46
   REFERENCES 47

CHAPTER IV EDUCATION 49

1. Introduction 49
2. University Programs 50
3. Canadian Armed Forces Program 51
4. Community College Programs 51
   Collèges d'enseignement général et professionnel (CEGEPs)
   Colleges of Applied Arts and Technology in Ontario (CAATs)
5. Number of Programs 52
6. Entrance Requirements for Dental Hygiene Education Programs 52
7. Education and Career Mobility for Allied Dental Personnel 52
   Career Ladder 52
   Career Options 54
8. Accreditation 55
9. Education for Expanded Functions 55
10. Continuing Education 56
    REFERENCES 57

CHAPTER V REGULATION 59

1. Introduction 59
2. Registration and Licensure 60
3. Composition of Regulating Bodies 60
4. Supervision 60
5. Self Regulation 74
6. Portability 76
   Options for Increased Portability 76
7. Conclusions 79
   REFERENCES 80

PAGE

CHAPTER VI DENTAL HYGIENE PRACTICE: AN OVERVIEW 85

1. Sources of Information 85
2. Definition and Analytical Framework 86
3. Conceptual Model of Dental Hygiene Practice 86
4. Historical Perspective 88
5. Classification and Distribution of Practice Settings 91
6. Dental Hygiene Services 95
7. Dental Hygiene Clinical Practice 97
8. Remuneration for Dental Hygiene Services 98
9. Conclusions 99
REFERENCES 100

CHAPTER VII DENTAL HYGIENE PRACTICE SETTINGS 103

1. Private Dental Practice 103
Implications of the Private Dental Practice Setting for Dental Hygiene Practice 106
Factors Influencing the Role of the Dental Hygienist in Private Dental Practice 107
2. Community Health 109
Health Unit Setting 109
Institutional Practice Setting 112
Primary Care Centres 115
Factors Influencing Future Roles 116
Potential Future Roles 117
3. Educational Institutions 118
Types of Educational Institutions 118
Dental Hygiene Programs 118
Dental Therapy and Dental Assisting Programs 120
Dental Programs 120
Future Opportunities in Education 120
4. The Canadian Forces Dental Services 120
5. Research 121
6. The Dental Industry 123
7. Industry and Union Dental Clinics 123
8. Private Dental Hygiene Practice: Practice Alternatives 124
The Self-Employed Dental Hygienist 124
The Independent Contractor Dental Hygienist 124
The Independent Practitioner Dental Hygienist 126
9. Conclusions 127
REFERENCES 130

PAGE

CHAPTER VIII INFLUENCING FACTORS 139

1. Demography 139
2. Changing Patterns of Dental Disease 140
3. Economics 141
   Canadian Expenditures for Dental Health Services 141
   Dental Insurance 141
   Tax-Supported Dental Care Plans 142
   Economic Impact of the Regulating Dental Health Personnel Other Than Dentists 143
4. Public Policy and Legislation 144
5. Relationship with Other Dental Health Personnel 146
   Dentists 146
   Regulation 146
   Employment 146
   Professional Associations 147
   Future Relationship between Dentistry and Dental Hygiene 148
   Other Dental Health Personnel 148
6. Relationship with Other Health Professionals 148
7. Socialization 149
8. Growing Professionalism 149
9. Professional Satisfaction 150
10. Research 151
11. Practice Standards, Competence Assurance and Quality of Care Assurance 152
12. Worldwide Developments in Dental Hygiene 153
13. Conclusions 154
    REFERENCES 155

CHAPTER IX DISCUSSION AND IMPLICATIONS FOR THE FUTURE 161

APPENDIX A - Sub-committee on Research, Working Group on the Practice of Dental Hygiene, Membership List, 1982 167
APPENDIX B - Advisory Committee on the Development of Clinical Practice Standards for Dental Hygienists, Membership List 168
APPENDIX C - Dental Hygiene Education Programs in Canada 169
APPENDIX D - Table D.I. Provincial and Territorial Licensing Authorities for Dental Hygienists 171
APPENDIX E - National Professional Associations 173
- Canadian Dental Hygienists' Association 173
- Canadian Dental Association 173
APPENDIX F - Table F.1. Summary of Responses to a Questionnaire sent in late 1982 to Selected U.S. State Licensing Authorities by the Working Group on the Practice of Dental Hygiene Re General Supervision of Dental Hygienists 174
Table F.2. Criteria Used in Making General Supervision Decisions 175
APPENDIX G - Canadian Dental Hygienists' Association Descriptive Statements Concerning Modes of Dental Hygiene Practice and Types of Supervision (as approved by the Canadian Dental Hygienists' Association Board of Directors, 1984) 176
APPENDIX H - Reports Relating to the Working Group on the Practice of Dental Hygiene 178

LIST OF TABLES

NUMBER	TITLE	PAGE
2.1	Legal Recognition of Dental Hygiene as a Health Occupation in Canada, by Provincial and Territorial Authorities And Year	18
3.1	Number of Licensed Dental Hygienists in Canada, by Province of Licensure and Year, 1966-1986.	31
3.2	Average Annual Rate of Growth in Number of Licensed Dental Hygienists in Canada, for Selected Periods, 1965-1985	32
3.3	Population Per Licensed Dental Hygienist, by Province and Territory of Licensure and Year, 1976-1986	33
3.4	Number of Graduates of Dental Hygiene Schools in Canada, by Province of Graduation and Year, 1953-1986 and Percentage Increase for Canada in Five-Year Spans	34
3.5	Number of Graduates of Dental Hygiene Schools, by Year and School of Graduation, Canada, 1976-1986	35
3.6	Actual and Projected Ratio of Dental Hygienists Per Dentist for Selected Years Between 1981 and 2001	37
3.7	Monthly Average Count of Vacancies for Dental Hygienists, in the National Job Bank, by Province, 1982-1986	37
3.8	Number of New Vacancies for Dental Hygienists in the National Job Bank, Canada and the Provinces, 1983-1986	38
3.9	Percentage Female:Male Distribution of Dental Hygienists in Canada, by Selected Years, 1976-1983	39
3.10	Percentage Dental Hygienists in Canada, by Age Group and Selected Years, 1976-1983	39
3.11	Percentage of Active Dental Hygienists in Canada, by Year of Graduation, 1940-1979	40
3.12	Percentage Employment Distribution of Dental Hygienists in Canada, by Selected Years, 1976-1983	41
3.13	Number of Active Licensed Dentists in Canada, by Province of Residence for Selected Years Between 1951 and 1986	42
3.14	Population Per Active Licensed Dentist in Canada and Percentage Change for Selected Years Between 1951 and 1986	43
3.15	Population Per Active Licensed Dentist by Province of Residence and Year, 1976-1986	44

LIST OF TABLES (Cont'd)

NUMBER	TITLE	PAGE
4.1	Dental Hygiene Education Programs in Canada - 1988	53
5.1	Authorities for Licensure and/or Registration of Dental Hygienists, by Province and Territory, 1987	61-63
5.2	Eligibility for Licensure and/or Registration of Dental Hygienists, by Province or Territory, 1987	64-67
5.3	Composition of Licensing and/or Registration Authorities for Dental Hygienists, by Province and Territory, 1987	68-69
5.4	Requirements for Supervision of Dental Hygienists, by Province and Territory, 1987	70-72
5.5	Requirements for Licensure and/or Registration of Dental Hygienist, by Province and Territory, 1987	77-78
6.1	Clinical Procedures Legally Performed by Dental Hygienists, Canada, 1985	87
6.2	Dental Hygiene Practice Model: Application of Four Model Components to Predominant Practice Types	90
6.3	Distribution of Dental Hygienists in Canada, by Type of Practice Setting and Employment Status, for Selected Years, 1965-1983	92
6.4	Existing and Potential Dental Hygiene Practice Settings in Canada, Ranked by Prevalence, 1985	93
6.5	Dental Hygiene Positions in Canada, by Type Of Employer and Usual Hours of Employment Per Week, 1983	93
6.6	Distribution of Dental Hygienists Employed in Canada, by Type of Principal Practice Setting and Province of Employment, 1983	94
6.7	Distribution of Dental Hygienists in Non-private-practice Settings in the United States, 1983	95
7.1	Classification of Dental Hygienists Employed in Health Units in Canada	110
7.2	Community Health Positions Available for Dental Hygienists in Canada, by Province and Classification, 1986	111
7.3	Health Care and Correctional Institutions Employing Dental Hygienists, Canada, 1986	113-114
7.4	Dental Hygienists Employed in Dental Hygiene Education Programs in Canada, by Province, Type of Institution, and Full- or Part-time Employment, and Highest Educational Qualification, 1985	119

LIST OF TABLES (Cont'd)

NUMBER	TITLE	PAGE
7.5	Locations in Canada Where Dental Hygienists in the Canadian Forces Dental Services Practise, 1985	121
7.6	Alternative Private Practice Arrangements for Dental Hygienists	125
D.1	Provincial and Territorial Licensing Authorities for Dental Hygienists	171
F.1	Summary of Responses to Questionnaires Sent in Late 1982 to Selected U.S. State Licensing Authorities by the Working Group on the Practice of Dental Hygiene Re General Supervision of Dental Hygienists	174
F.2	Criteria Used in Making General Supervision Decisions	175

LIST OF FIGURES

NUMBER	TITLE	PAGE
1.1	Old Model of Dentist and Dental Auxiliaries	14
1.2	New Model of Dental Health Personnel, Dental Health Professionals or Dental Health Team	14
6.1	Model for Dental Hygiene Practice	89
6.2	Percentage Distribution of Time Devoted, by Dental Hygienists Employed in Dental Hygiene in Canada, to Each Area of Responsibility by Type of Principal Employer, 1983	96
8.1	Development of Public Policy	145

EXECUTIVE SUMMARY AND RECOMMENDATIONS*,**

1. EXECUTIVE SUMMARY

Introduction

The Working Group on the Practice of Dental Hygiene was formed in 1981 by the Department of National Health and Welfare Canada. It is composed of eight dental hygienists and five dentists, nominated by national professional organizations such as the Canadian Dental Hygienists' Association, the Canadian Dental Association and the Canadian Society of Public Health Dentists. The members come from widely diverse backgrounds including private practice, community health, hospitals, dental and dental hygiene education. They also represent all major geographic regions and both official Canadian language groups - English and French.

The Working Group met over a period of approximately six years. It recommended to Health and Welfare Canada that two additional committees be established: the Sub-committee on Research and the Advisory Committee on the Development of Clinical Practice Standards for Dental Hygienists. The Sub-committee on Research, composed of seven dental hygienists and two dentists, was formed in 1982. In cooperation with the University of Manitoba School of Dental Hygiene, the Sub-committee organized the first conference on dental hygiene research to be held anywhere world-wide. The conference was held September 30 - October 1, 1982 in Winnipeg. The Advisory Committee on the Development of Clinical Practice Standards for Dental Hygienists was established in 1983 when it became clear that the issue of practice standards was of such magnitude and complexity that it could not be developed adequately by the working group. The advisory committee includes dental hygiene and dental educators and researchers, practicing dental hygienists, and two research methodologists. The results of its study, after being reviewed by the main working group, will be published as part two of the working group report.

The objectives of the Report of the Working Group on the Practice of Dental Hygiene, Part One are: to provide a basic description of the practice of dental hygiene in Canada, to identify major studies and references in this field, to describe major issues of current concern and to suggest principles for consideration in the future study of these issues, to identify other areas for further research and study, and to make recommendations.

Dental hygiene originated as a health occupation in the United States in 1907. The initial impetus for the establishment of dental hygiene in Canada came from public health in the late 1940s, although employment opportunities in private practice soon followed. Legal recognition of dental hygiene as a health occupation by provincial and territorial authorities in Canada occurred as follows: Ontario - 1947, Saskatchewan - 1948, Prince Edward Island - 1950, British Columbia - 1951, Manitoba - 1952, New Brunswick - 1953, Nova Scotia - 1955, Yukon - 1958, Alberta - 1959, Québec - 1962, Northwest Territories - 1967, and Newfoundland - 1968.***

The two most influential phenomena in the development of dental hygiene since the end of

---

* The Executive Summary has been updated and revised since March, 1986; however; the recommendations are the same.

** In August 1986, the Board of Directors of the Canadian Dental Hygienists' Association accepted the Executive Summary and Recommendations as an official policy statement.

*** In the Executive Summary and Recommendations which were published in March, 1986 legal recognition of dental hygiene in Québec was erroneously stated as 1946.

World War II have been the expansion of dental hygiene world-wide, with it now existing in more than 50 countries, and the investigation of extended functions for dental hygienists, resulting in significant changes in practice in some jurisdictions. There are now approximately 75,000 dental hygienists throughout the world with some 6,000 of those located in Canada.

Professional Associations

In Canada, the development of professional dental hygiene organizations began in the early 1960s. The Canadian Dental Hygienists' Association was officially constituted in 1965, representing dental hygiene organizations from Ontario, Nova Scotia, Alberta and Manitoba. By 1978, the Canadian Dental Hygienists' Association represented constituent associations in all 10 provinces. Incorporated in 1985, the Canadian Dental Hygienists' Association has assumed an influential role in the development of dental hygiene in Canada. Some of its activities have included: presentation of briefs to the federal government Ad Hoc Committee on Dental Auxiliaries (1968) and the Health Services Review Commission (1979), hosting the Seventh International Symposium on Dental Hygiene (1979), holding workshops on organizational development, continuing education, dental hygiene education and licensure portability, cooperating with Statistics Canada on the collection of data concerning dental hygienists in Canada, providing financial assistance for the Conference on Dental Hygiene Research (1982), and helping to fund studies on dental hygiene human resources (formerly called manpower).

Education

Basic preparation for dental hygiene practice in Canada has generally been a two-year diploma program. The first dental hygiene education program in Canada was established at the Faculty of Dentistry, University of Toronto in 1951. Classes were small (usually six to eight) until the faculty moved into a larger building in 1961, when the dental hygiene classes increased in size to 50 per year. In 1956 the Canadian Armed Forces began an educational program for dental hygienists. Two university-based dental hygiene programs commenced in 1961, at the University of Alberta and Dalhousie University, followed by programs at the University of Manitoba in 1963 and the University of British Columbia in 1968. Canada's first baccalaureate program in dental hygiene commenced operation at the University of Montreal in 1971, with the second following at the University of Toronto in 1977.

Dental hygiene programs have been located in community colleges since 1972, when Quebec established programs in six CEGEPs (Collèges d'enseignement général et professionnel). The first community college program in Ontario was established at Algonquin College of Applied Arts and Technology in Ottawa in 1974 followed by 10 other college programs in 1977. In 1979, a one-year program in dental hygiene was established at the Wascana Institute of Applied Arts and Sciences in Regina for persons already qualified as dental therapists.*

The need was identified in the 1960s for Canadian baccalaureate programs in dental hygiene to prepare dental hygiene and dental assisting educators, public health supervisors and consultants, and researchers. A market survey in western Canada in 1983 identified sufficient potential employment opportunities to warrant the establishment of a baccalaureate dental hygiene program in western Canada. Similar surveys in the Atlantic provinces, Quebec and Ontario would assist in determining the need for degree-level dental hygienists in these areas.

Continuing education is recognized by Canadian dental hygienists as being necessary throughout one's professional life. In Canada, the participation rate of dental hygienists in continuing education is fairly high. The Canadian Dental Hygienists' Association has played a prominent

* Dental therapists are educated to provide restorations, extractions and preventive dental services to selected clientele under prescription from a dentist.

role in fostering continuing education expertise in its constituent organizations, and has recently surveyed the continuing education requirements to maintain licensure.

Human Resources

In the 1960s, the main human resource issues were the current and projected shortages of dental health personnel.* Factors such as a growing population, greater affluence, and expanding public interest in dental health led to a predicted need for a greatly increased number of dental health personnel. More dental hygienists and expanded functions for dental hygienists were widely advocated. By the late 1970s the situation had reversed, and concerns expressed now are of a projected surplus of dental health personnel. The number of licensed dentists in Canada nearly doubled in the two decades between 1964 and 1984, (from 6,218 to 12,624). Population growth did not keep pace, resulting in a reduction in the population: dentist ratio.

In recent years the number of dental hygienists has grown proportionately faster than the number of dentists, increasing from 165 in 1964 to 5315 in 1984, a more than 30-fold increase. This phenomenal growth was the result of many new dental hygiene education programs being established. By the end of the decade 1972-1982, there were more than three times the number of dental hygienists graduating than there were 10 years earlier. The ratio of dental hygienists: dentists in Canada will change from 4:10 in 1983 to 7:10 in the year 2001 if the present rate of growth continues. At present, dental hygiene graduates experience little difficulty locating employment, with a few exceptions, in spite of concerns expressed about a perceived or actual oversupply of dental hygienists. The decreasing prevalence of dental caries and the identification of periodontal disease as the major oral condition of the near future in Canada provide the rationale for maintaining an adequate supply of dental hygienists to meet future oral health needs effectively and efficiently.

Dental hygienists in Canada are almost all female (98%). Their mean age is just under 30 years. In contrast with some persistent myths, most dental hygienists remain in the workforce for many years, usually leave for only a relatively short time when they have children, work on a full-time basis, and work at only one worksite.

Planning for health human resources is a difficult and uncertain endeavour, and many of the outcomes of studies on human resources are determined by the assumptions upon which they are based. Studies on dental human resources have often assumed that the demand for dental care will remain relatively constant, that the existing pattern and prevalence of dental disease will not change greatly, that the delivery of care will remain as at present, and that the types and functions of dental health care providers will not change. Forecasts tend to vary depending upon the reporting agency; however, it should be noted that human resource planning models in the dental field have usually been developed by or for dentists. New models are needed incorporating factors such as demographic shifts, changing patterns of dental disease, changing demand for care, increasing productivity, and possible future roles of all dental health personnel in the provision of dental care.

Regulation

The primary purpose of regulating the practice of any health discipline is to protect the interests of the public by ensuring that standards of safety and quality are met. Regulation should serve occupational needs only so far as they correspond to the needs of the public. Nevertheless, a basic problem exists in that occupational groups have two major interests: those of their profession and those

* Dental health personnel as a classification includes dentists, dental hygienists, dental therapists, dental assistants and other occupations in the dental health field. Dental personnel more correctly refers to dentists although the term has been used in the collective sense.

of the public, and the two interests are not always compatible.

Many health professions in Canada are self-regulating and yet, with the exception of Quebec and more recently Ontario, this is not true of dental hygiene. The dental hygiene profession in Canada is usually regulated under dental practice acts administered by dental boards. Representation of dental hygienists on these bodies is minimal or in some cases altogether lacking. Regulation has become a major issue in dental hygiene because the profession is not only regulated by another group - one representing the employers of dental hygienists - but is considered by many, such as community health officials and long-term care providers, to be over-regulated. In many provinces, as in many states of the United States, dental hygiene organizations are expressing a need for the profession to achieve self-regulation. This is not only a result of the growing maturation of dental hygiene as a health profession, but is consistent with the principle that it is inappropriate for one occupational group to regulate another. This viewpoint has been expressed frequently by government committees, economists and other authors and is discussed in the main report.

At the national level one of the primary regulatory issues in dental hygiene is the portability of licensure and other occupational credentials between provincial and territorial jurisdictions. Canadian society has become increasingly mobile, and the ability of dental hygienists to move from one area of the country to another without losing the opportunity to practise dental hygiene is a major concern. Nine of 10 provinces as well as the two territories allow portability for graduates although there are restrictions in some jurisdictions.

At the provincial level the primary regulatory issue concerning dental hygienists at present is that of supervision. In most jurisdictions, dental hygienists are required to work under the supervision of a dentist, and the interpretation of the term "supervision" by the regulating dental bodies is such that the presence of a dentist at the worksite is required. The exception to this situation is British Columbia. It is also usual practice in public health situations for dental hygienists to work without on-site supervision by a dentist. Public health dental hygiene practice, and private practice in British Columbia and several of the states in the United States where on-site supervision is not required, have demonstrated over several decades that a general rather than on-site level of supervision is compatible with the interests of health and safety for the public.

Strict supervision requirements do not give recognition to the educational preparation and clinical competence of dental hygienists, to their status as licensed health care providers, or to the nature of work in which they are engaged. The requirement of on-site supervision for dental hygienists is not only inconsistent with supervision requirements for other health professions in Canada, but it restricts the availability of needed preventive dental health services in locations such as institutions and other sites which do not require the full-time services of a dentist.

Many present structures and regulations concerning dental hygiene limit the availability of services. It is in the best interests of the public that changes be introduced in the area of supervision, portability, and self-regulation requirements. These changes in the regulation of dental hygiene would increase the public's access to preventive dental health services and reflect the level of responsibility which dental hygienists should assume by virtue of their education and licensure.

Dental Hygiene Practice

Dental hygiene practice consists of prevention-oriented educational, clinical, and therapeutic measures provided by a dental hygienist in order to promote optimal oral health and thus contribute to the total health of the public. Dental hygiene practice is easier to understand if it is viewed as a process rather than as a set of specific tasks. With this purpose in mind the Working Group on the Practice of Dental Hygiene has developed a schematic model of dental hygiene practice. The model, adapted from nursing and community health models, shows the interrelationships of the functions of

assessment, planning, implementation and evaluation, the environment within which practice occurs, and activities and structures which ensure quality of service.

For many years after its inception the practice of dental hygiene evolved rather slowly, but during the 1960s and the 1970s rapid and extensive changes occurred. There was much discussion and concern, not only with the functions which should be included in dental hygiene practice, but also with the variety of practice settings and the range of responsibility and decision-making appropriate for dental hygienists.

A variety of dental hygiene practice settings exists in Canada today. "Traditional" settings include private dental practice (general and specialty practice in solo and group practice arrangements), community health (federal, provincial, regional and municipal government programs), educational institutions, the Armed Forces and hospitals. A group of dental hygiene practice settings which are found in Canada to a much more limited extent (and are sometimes characterized as "emerging") include: alternative private practice arrangements (e.g. multi-location group practices, retail centres), institutions other than hospitals (e.g. correctional institutions), community settings other than schools (e.g. day care and seniors centres) the dental industry, union and corporate dental clinics, and research institutions. Dental hygiene practice settings found in the United States but not in Canada include health maintenance organizations, oral hygiene clinics and dental hygiene practices.

The majority of dental hygiene positions in Canada are in private dental practice (82 percent). Community health settings account for about 10 per cent of positions and post-secondary educational institutions for more than five per cent. Positions in all other practice settings account for slightly over two per cent of the total.

The services dental hygienists provide can be categorized into five major areas: clinical services, dental health education, teaching of students in the dental health field, administration, and other services such as research and consulting. Dental hygienists in private practice devote over 75 per cent of their time to clinical activities particularly preventive periodontal procedures and just under 20 per cent to dental health education. Dental hygienists in community health spend more than 50 per cent of their time on dental health educational services, almost 25 per cent on clinical services, and just about 20 per cent on administration and other service responsibilities. Dental hygienists employed in post-secondary educational institutions spend more than 50 per cent of their time teaching students in the dental health field, almost 15 per cent on administrative responsibilities, and just less than 10 per cent on clinical and dental health educational activities combined.

Dental hygiene practice as it evolves in each of the major practice settings will be subject to varied and distinct influences, making projections difficult. However, certain trends appear likely.

Private dental practice will most likely remain the most common workplace for dental hygienists in Canada. The effect on dental hygiene practice of the development of non-traditional dental practice sites such as retail centres and satellite clinics, and alternative methods of financing such as capitation, have yet to be determined. The most influential factors affecting dental hygiene practice in private dental practice today are the supervising dentist's perception of the dental hygienist, the regulatory requirements, and the perceived over-supply of dental health personnel. As the focus of health shifts to considerations of wellness and self-care, the role of the dental hygienist in health promotion and the prevention of dental disease could become more significant. Although dentistry in general has been somewhat reluctant to recognize the potential of dental hygiene as an emerging health profession, the official positions of organized dentistry are undergoing some review and restatement at the present time. These changing perspectives may well foster the development of a more collaborative approach to dental health care, in which dental hygienists are considered knowledgeable about their field and able to make decisions about clinical dental

hygiene procedures within the scope of dental hygiene practice.

Regulation, as it currently exists, restricts the availability and scope of dental hygiene services. A perceived over-supply of dental health personnel could possibly have a profound effect on the availability of and the nature of employment for dental hygienists. If the response to a perceived surplus of dental care providers by the dental health professions together is to search for ways to increase the demand for dental care so that it more closely matches the needs of those persons who presently receive insufficient care, employment opportunities for dental hygienists likely will increase. This will be the result of three factors: dentists may increasingly employ dental hygienists as their practices become busier, alternative employment opportunities may emerge as organized dentistry (which through its regulatory and other powers defines many of the employment opportunities for dental hygienists) seeks to make private dental practice sites more accessible to a wider range of clientele, and, greater recognition of the cost-effectiveness of dental hygienists providing preventive services may result in increasing employment for dental hygienists. Recent thinking would conclude that the answer to the possible over-supply problem of dental health personnel is not to restrict the employment of dental hygienists. It is hoped that the dental health professions will take a constructive and collaborative approach.

Public practice settings for dental hygienists include community health and institutions. Community health dental hygienists provide a broad range of services in health education and promotion, clinical practice, health program development consulting, administration, evaluation and research. Their client groups are primarily school children and preschool children. Nevertheless, adults, expectant parents, the handicapped and the elderly are becoming major client groups as the Canadian population changes and needs are being reassessed.

Factors influencing future roles for dental hygienists in community health include the relative supply of human resources, the development of suitable post-diploma degree programs in dental hygiene, modification of restrictive legislation, the extent to which community health programs are developed, the establishment of community health program standards and the changing oral health status of Canadians.

Institutional practice settings, in addition to acute care hospitals, include long-term care and correctional institutions. Long-term care institutions include chronic care and rehabilitative/convalescent, facilities for such client groups as the emotionally disturbed, the mentally or physically handicapped, and elderly persons with medical disabilities. At present, dental hygienists are employed in all of these practice settings to some degree; however, many more responsibilities could be assumed by dental hygienists in institutional settings with the adoption of appropriate supervisory regulations.

Approximately five per cent of Canadian dental hygienists in 1983 were employed in post-secondary education programs for students in the dental health field and the actual numbers will probably remain relatively constant for the foreseeable future. In these settings, dental hygienists function as academic and clinical teachers, program coordinators, administrators and researchers. Most dental hygiene educators have credentials at the baccalaureate level or beyond, the exception at this time being those in the community colleges of Ontario.

The Canadian forces Dental Services employs about 70 dental hygienists. Most have received their educational preparation in the Canadian Forces Dental Services School at Base Borden, Ontario, but in recent years employment has also been offered to dental hygienists from accredited civilian programs. Research, the dental industry, and industrial and union dental clinics also provide a few practice opportunities at present for dental hygienists.

Influencing Factors

Many factors will influence the development of dental hygiene in Canada in future years. The need for dental hygiene services will be greatly affected by the demographic shift to a more elderly population, combined with a changing

pattern of dental disease. Dental caries rates are declining in developed countries such as Canada. This means that more people will retain their natural teeth throughout life, providing their periodontal health can be maintained. These phenomena will result in a greater need for the services which dental hygienists provide. Increased affluence and education will also produce more demand for preventive dental health services.

Health and Welfare Canada reports that dental services account for approximately six per cent of the total expenditures (public and private) for health care. While most of the dental care expenditures occur within the private sector, in recent years prepaid dental insurance and tax-supported dental care plans have assumed increasing importance. Both systems of financing dental care may result in an increased demand for dental hygiene services as ways are sought to provide services of comparable quality at lower cost than those presently provided and to contain the escalation of these costs by emphasizing preventive care. Restrictive regulations which limit access by the public to preventive services provided by dental hygienists have been identified as one factor in the increasing costs of dental health care.

A positive relationship with the dental profession is of paramount importance to dental hygiene. Most of the interactions between the two groups may be categorized under employment, regulation and professional associations. In spite of some understandable strains between dentistry and dental hygiene, the role of the dental hygienist in the provision of dental health care will remain closely linked with dentistry. The interests of both groups and of the public will be best served by continuing and effective collaboration between dental hygiene and dentistry. Some changes in the traditional relationship between the two groups have been suggested: greater regulatory autonomy for dental hygiene, more flexible working arrangements and functions, less stringent requirements for supervision, and greater recognition of the existing and potential contribution of dental hygienists to improving the dental health of Canadians.

The growth of dental hygiene as a profession has also been influenced and indeed hampered by female/male stereotyping which has been evident in many health professions in past years.

Dental hygiene has been composed almost exclusively of women while the opposite has been true of dentistry - the more senior profession and the profession with the greatest impact on dental hygiene. With the social role changes taking place within Canadian society, the characteristics of dental hygiene which identify it as a female occupation are lessening. At the same time, there are rising aspirations of dental hygienists to contribute more fully to the Canadian health care system. This is consistent with the evolution of other emerging health professions such as physiotherapy and occupational therapy.

Dental hygiene has changed markedly since its beginning in 1907, and especially since the end of World War II. Dental hygiene is certainly an important element in the dental health services delivery system and as dental health care is regarded more clearly as an essential health service in Canada, then dental hygiene has the potential to play an even greater role in the future.

2. RECOMMENDATIONS

The Working Group on the Practice of Dental Hygiene recommends:

History

1. That ongoing records maintained for historical purposes and future planning continue to be kept by the Canadian Dental Hygienists' Association, licensing bodies and schools of dental hygiene.

2. That the Canadian Dental Hygienists' Association appoint an historian to prepare continuing historical reviews on dental hygiene in Canada and publish these in the association journal.

Human Resources

3. That the Canadian Dental Hygienists' Association and provincial dental hygiene associations be directly involved in all activities relating to dental hygiene human resources.

4. That health human-resources planning agencies examine the assumptions underlying dental reports and recommendations on dental human resources when considering their use.

5. That a model to forecast dental hygiene human resource needs be developed which incorporates consideration of changing dental disease rates, population shifts, possible changing delivery systems, and changing functions and practice settings of dental health personnel.

6. That dental hygiene education programs and human resource planning agencies work together to coordinate the number of graduating dental hygienists with current and projected human resource requirements.

7. That the survey instrument developed at the University of Manitoba to assess employment demand for baccalaureate level dental hygienists in western Canada be utilized for the remaining provinces so that a national estimate of such human resource needs can be made.

See also recommendation number 43.

Education

8. That if, as in the survey of the western provinces, the surveys of potential employers in the remaining provinces indicate a need, post-diploma baccalaureate programs be developed or expanded in these areas.

9. That a post-diploma program leading to a baccalaureate degree be established within a university in western Canada which already has experience with a diploma program in dental hygiene.

10. That the present post-diploma degree programs at Canadian universities be continued, and that they be appropriately reviewed and revised to reflect current and developing roles for dental hygienists.

11. That at least one master's level program in dental hygiene be developed in Canada as one means of preparing dental hygienists for increased responsibilities in education, community health, administration and research.

12. That the criteria for entrance into the Diploma in Dental Public Health (DDPH) program be reviewed with a view to admitting dental hygienists.

13. That dental hygienists be encouraged to pursue post-baccalaureate education in a variety of disciplines to prepare for careers in areas to include research, education and community health.

14. That the combined dental hygiene and dental assisting programs, where they exist, be separated and that the dental hygiene programs be restored to a two-year diploma program which is considered as the basic program for dental hygiene practice.

15. That, if a reduction in the number of graduating dental hygienists becomes necessary, existing dental hygiene education programs not be closed. Alternatives should be considered, such as graduating classes of students in alternate years or reducing class size, which would more easily permit a subsequent increase in the number of graduating dental hygienists if future circumstances warrant it.

16. That there be no reduction in present enrollment levels in dental hygiene until there is clear evidence of a definite over-supply.

17. That there be better educational preparation of dental students concerning the role, education, and areas of expertise of

dental hygienists as well as the practical aspects of employing dental hygienists.

18. That the existing dental hygiene education programs located within Canadian faculties of dentistry be maintained, and that those dental faculties currently without such programs be encouraged to establish them. It is further recommended that dental and dental hygiene programs within dental faculties be integrated to encourage a collaborative approach to dental health care.

19. That recruitment efforts and admissions information be developed to encourage men to select dental hygiene as a career.

20. That dental hygiene educators teach dental hygiene practice as a process using the model suggested in the report or one which is similar.

21. That dental hygiene educators promote all practice settings as opportunities for dental hygiene practice.

22. That dental hygiene education programs adhere to criteria based on standards of practice.

23. That all dental hygiene education programs in Canada continue to seek accreditation from the Canadian Dental Association through its Council on Education and Accreditation.

24. That there be increased representation of dental hygienists on the body determining the accreditation status of dental hygiene education programs.

25. That dental hygiene education programs ensure there is adequate didactic and clinical experience to prepare dental hygiene students and graduates to respond to the dental health needs of older adults and other underserved groups.

26. That continuing education programs be conducted throughout Canada to update the knowledge and skills of practising dental hygienists concerning the dental health needs of older adults and other underserved groups.

27. That courses be provided in all geographic regions for dental hygienists wishing to return to the work force.

28. That provision of and participation in continuing education be encouraged through a variety of learning experiences designed to meet the specific needs of all dental hygienists, and in particular that increased continuing education programs in community dental health be provided.

Regulation

29. That the regulation of dental hygiene be vested in bodies composed primarily of dental hygienists.

30. That in those jurisdictions where self-regulation cannot be implemented at once, dental hygienists be granted significant voting membership on licensing bodies as an immediate and interim measure.

31. That, whereas it should be recognized that many of the functions of the dental hygienist do not require supervision by a dentist, the respective jurisdictions review the legislation and regulations concerning the clinical practice of dental hygienists and that those functions which do not require the supervision of a dentist be determined and reviewed periodically.

32. That, where clinical procedures performed by the dental hygienist should be provided under the supervision of a dentist, the regulations specify the level of supervision as general (i.e. the dentist is aware of the procedures to be undertaken but need not to be present at the worksite).

33. That the determination of those particular situations in which closer supervision is required be a decision of the supervising dentist and the dental hygienist concerned.

34. That institutions such as long-term care facilities and community health clinics be able to employ dental hygienists, provided consulting or referring dentists are available.

35. That sections of legislation and regulations which define the scope of dental hygiene practice do so in terms of responsibilities and functions which are not included in dental hygiene practice, rather than listing those functions included in the scope of practice.

36. That graduates of dental hygiene education programs which have met nationally recognized accreditation standards be eligible for full or provisional licensure in any province or territory: full licensure if all the major dental hygiene functions in that jurisdiction were taught in the program of graduation, provisional licensure if the major dental hygiene functions in the jurisdiction were not taught in the program of graduation.

37. That licensing bodies ensure the availability of courses covering the major functions necessary for dental hygienists provisionally licensed in the respective jurisdictions to become fully licensed.

38. That a national board examination in dental hygiene be established to cover both clinical and didactic areas of the identified core for graduates of non-accredited Canadian dental hygiene programs and for graduates of foreign dental hygiene programs which are not covered by reciprocal accreditation agreements with Canada.

39. That existing models of national and regional dental hygiene examinations be studied for their applicability in Canada.

40. That when clinical practice standards for dental hygienists are developed and validated at the national level, these be used as the basis for the national board examination for licensure.

41. That there be a meeting convened with representatives of provincial licensing bodies, the Canadian Dental Hygienists' Association, the Canadian Dental Association, and provincial dental hygiene associations to consider and recommend means of increasing licensure portability for dental hygienists.

Dental Hygiene Practice

42. That a nationally-recognized broad core of dental hygiene functions be identified and that a mechanism be established to keep this core description current.

43. That a data bank on dental hygiene practice and human resources be maintained by periodic surveys conducted at intervals of approximately four years, and augmented each decade by a more comprehensive study, such surveys to be conducted by Statistics Canada, the Canadian Dental Hygienists' Association or some other appropriate national body.

44. That dental hygiene employment data, including remuneration and benefits, be updated periodically by the Canadian Dental Hygienists' Association and provincial dental hygiene associations.

45. That provincial licensing bodies collect and tabulate demographic data annually concerning dental hygienists and make these data available.

46. That dentists and dental hygienists be encouraged to work in collaborative practice arrangements where their respective care regimens are integrated into a comprehensive approach to quality client service.

47. That demonstration models using new practice settings and variations of existing settings be created and carefully assessed regarding the quality and availability of dental health services.

48. That the Canadian Public Health Association re-establish a community dental health section.

49. That the Canadian Public Health Association or some other national organization update the 1970 CPHA recommendations concerning professional education requirements and positions for dental hygienists in community health.

50. That the Canadian Dental Hygienists' Association and provincial dental hygiene associations establish community dental health sections within their associations.

51. That the federal and provincial deputy ministers of health support annual federal-provincial meetings of representatives of community health dental hygienists employed at the federal and provincial level.

52. That community dental health policy and programs be reviewed and evaluated in the light of demographic and epidemiological changes.

53. That dental practitioners and dental hygienists develop an appropriate system in each practice setting to monitor, evaluate and modify dental health services.

54. That the report on clinical practice standards for dental hygienists, when available, be distributed widely to practising dental hygienists, employers (both individual and institutional), dental hygiene and dental associations, dental hygiene education programs, licensing agencies, and provincial, regional and municipal concerns.

55. That dental hygiene researchers be encouraged to investigate the research questions identified during the 1982 Conference on Dental Hygiene Research.

56. That researchers be encouraged to define and investigate questions exploring the implications of various dental hygiene practice characteristics for quality of care, efficiency and effectiveness of dental health services and consumer and provider satisfaction.

57. That, in order to promote the development of research in dental hygiene, priority be placed on the educational preparation of dental hygienists to conduct research.

58. That the availability of scholarships, bursaries, research fellowships and other forms of financial assistance for dental hygienists interested in seeking research education preparation be publicized by the Canadian Dental Hygienists' Association, provincial dental hygiene associations, schools of dental hygiene and faculties of dentistry.

59. That a conference on dental hygiene research be held periodically in Canada at intervals of not more than five years.

Influencing Factors

60. That dental hygiene and dental associations develop continuing education programs concerning the role, education, areas of expertise, and practical aspects of employing dental hygienists.

61. That national and provincial dental and dental hygiene associations establish joint committees to identify and make recommendations concerning employment issues of mutual concern.

62. That national and provincial dental and dental hygiene associations have reciprocal representation on committees of their organizations which deal with issues of mutual concern.

63. That a dental health advisory committee, having equal representation from the Canadian Dental Association, the Canadian Dental Hygienists' Association, the Canadian Dental Assistants' Association, dental therapists and lay people be established to discuss and make recommendations concerning dental health matters of mutual concern and to report back to

their member organizations and other interested parties.

64. That the Canadian Dental Hygienists' Association and provincial/local dental hygiene associations seek active collaboration with the associations of other health professionals in health promotion and disease prevention projects.

65. That the role of the dental hygienists in research, including the evaluation of dental health services, be further developed.

I

INTRODUCTION

A dental hygienist is a health professional who, through clinical, educational, consultative, planning and evaluation endeavours, seeks to prevent oral disease, provide interceptive treatment for existing disease, and assist people in maintaining an optimum level of oral health. Dental hygienists are the only health professionals whose primary concern is the prevention of oral disease.

Dental hygiene is a world-wide phenomenon now recognized in more than fifty countries representing all continents (FDI, 1981). Dental hygiene began in the United States in 1907, but its international growth is a feature of postWorld War II dental health care (Motley, 1972).

In recent years, there has been a growing feeling that the term dental auxiliary is inappropriate to apply to dental hygienists. The connotation of auxiliary as meaning extra help is incongruent with the status of educated and credentialed providers of direct patient care. Medicine discarded the use of the terms auxiliary and ancillary in favour of professional (Woodall and Bentley, 1983).

Even the qualifying terms "allied" and "intermediate-level" professional are no longer in common usage. Similarly, in the dental health field, personnel increasingly are referred to by their specific occupational title (e.g. dentist, dental hygienist, dental assistant) or in general as dental health professionals, a usage described by Striffler, Young and Burt (1983) in their text "Dentistry, Dental Practice and the Community". This terminology denotes a much more collegial and collaborative relationship which is becoming more prevalent today than the traditional dentist: dental auxiliary relationship as illustrated in the following models (Amer, 1987). This new model can be expanded to include personnel in the area of dental technology e.g. dental technicians, dental mechanics. The new model also reflects modern concepts of management.

In Canada, dental hygiene has developed from beginnings in Saskatchewan in 1949 and in Prince Edward Island in 1950 to a nationwide movement now active in all provinces and territories, and comprising a total of more than 6,000 members. Initially dental hygienists were perceived as dental auxiliaries who could be trained to deliver certain limited services, usually related to prevention of oral diseases, under the supervision of the employing dentist. In most provinces the level of regulation was high and required close supervision of dental hygienists in private practice settings. The past two and a half decades have seen marked advances in dental hygiene education, the development of standards for accreditation of education programs, registration and licensing procedures and a high level of participation by dental hygienists in continuing education courses. There has been a growing sense of professionalism and professional responsibility among dental hygienists. Regulation of dental hygiene practice, however, remains an area where little change has occurred (Johnson, 1982).

By reason of its orientation to the prevention of disease, its national recognition, and the growing number of hygienists, dental hygiene has become a significant factor in the delivery of dental care to Canadians. It holds the potential of being even more influential in the future.

The practice of all types of dental health care providers in Canada reflects recent changes: in oral health needs and demands of Canadians; in the nature, funding and delivery of dental services; and in the education, regulation, types and relative numbers of dental personnel. The impact of these changes on the dental hygiene profession has been significant and may be even more profound in the future. Future changes will be influenced also by such factors as government policies on preventive dental care,

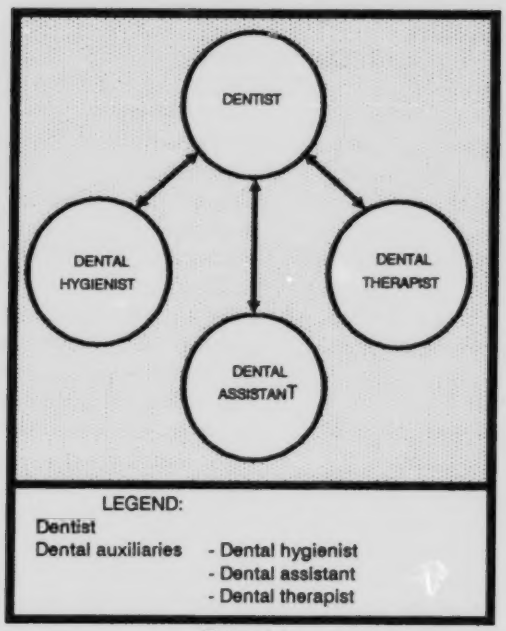

Figure 1.1
Old Model of Dentist and Dental Auxiliaries

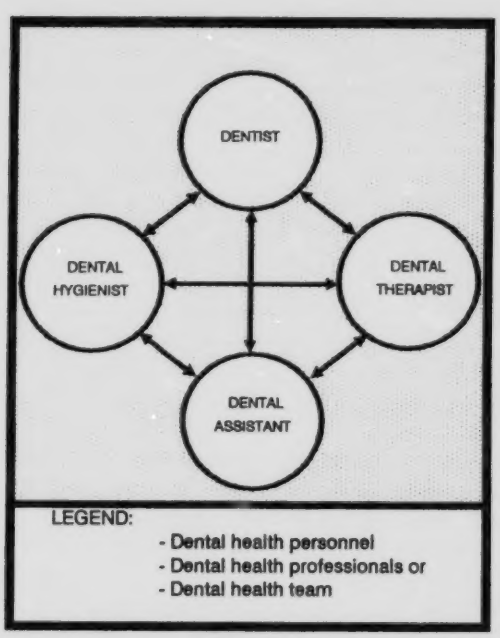

Figure 1.2
New Model of Dental Health Personnel, Dental Health Professionals or Dental Health Team

revisions in legislation governing dental hygiene, public interest in prevention as the preferred approach to dental health, changing demographic, epidemiologic and economic conditions, and new avenues for the prevention of dental disease discovered through research. It is, therefore, an opportune time to examine dental hygiene practice in Canada, and to make recommendations and guidelines which will be valid and useful for dental hygiene practice, and which will be applicable to many types and combinations of practice settings - be they traditional, emerging, or innovative.

The purpose of this report is:

1. to provide a source of basic descriptive information about dental hygiene in Canada;

2. to identify major studies and references in this field;

3. to describe issues of current concern and to suggest principles for consideration in their future study;

4. to identify areas for further research and study; and

5. to make recommendations.

It is hoped that the report will be of value and use to several interest groups: individual Canadian dental hygienists and their employers, professional associations, provincial regulating agencies, provincial departments of health and of education, consumer associations, faculty, students, and administrators of institutions educating dental health personnel, community health services planners and policy makers at the federal and provincial levels, international agencies and organizations.

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II

HISTORY

1. The Origin and Growth of Dental Hygiene

Dental hygiene originated as a health occupation in the United States in 1907 and subsequently spread to many other countries of the world. The need for a focus on prevention in dentistry was recognized as early as 1844 in the United States with the appearance of an editorial on oral hygiene in the first dental periodical, the American Journal of Dental Science (Motley, 1972). Interest in oral hygiene continued to develop and many dentists advocated that emphasis be placed on the prevention of dental disease. The first-recorded practice which was oriented to prevention was begun in 1894 by Dr. D.D. Smith in Philadelphia. Dr. Smith spoke to many groups, presenting papers on oral prophylaxis and patient education (Motley, 1986, 1972).

It was in 1902 that the first suggestion of teaching women to clean teeth came from Dr. C.M. Wright of Cincinnati, Ohio. He presented a paper entitled "A Plea for Subspecialty in Dentistry" (Motley, 1986, 1972). A few years later, sometime after 1910 and before 1913, Dr. Wright, who was a professor at the Ohio State Dental School, gave a course for young women on cleaning teeth. These individuals were called dental nurses and, although they were taught to provide an oral prophylaxis, the state would not allow them to practise. Two of the six young women went back to school and became dentists (Watterson, 1983).

In 1907 amendments to the Connecticut Dental Practice Act provided the first legal recognition of dental hygiene as a health occupation. At this time Dr. Alfred Fones, who became known as the father of dental hygiene, trained his assistant in techniques of oral prophylaxis. Fones did not like the term dental nurse because it was associated with disease. His definition of hygienist was "...one who is versed in the science of health and prevention of disease". Eventually the term dental hygienist was coined (Motley, 1986, 1972).

Dr. Fones realized the advantages of public health school clinics staffed by dentists and women to give prophylactic treatment and dental health instruction to children. He also implemented the first formal educational program for dental hygienists in 1913. The fact that the need for formal training was recognized and acted upon only six years after the first dental hygienist was trained is a tribute to the foresight and dedication of Dr. Fones and his colleagues (Motley, 1986, 1972).

Recognition of dental hygiene spread gradually but steadily in the United States in the period between its inception and the end of World War II in 1945. By that time dental hygienists were licensed to practise in 48 states and there were 17 schools of dental hygiene in operation (Fales, 1975). The explosion of demand for post-secondary education which occurred in most occupational fields in the post-war period was experienced by dental hygiene. By 1983 there were almost 200 schools of dental hygiene in the United States, and all states (as well as the District of Columbia and Puerto Rico) licensed dental hygienists (Fales, 1975).

The growth of professionalism in dental hygiene has been exceptional. The process of professionalization is defined as a dynamic process whereby many occupations can be observed to change certain crucial characteristics in the direction of a profession. These characteristics specify (1) "that identification of criteria symbolizing a profession has been identified in the literature, (2) that university training has been established and, (3) that graduate degrees are awarded" (Wayman, 1982). Dental hygiene in the United States has been actively engaged in the process of professionalization and has established six university programs in the United States which grant master's degrees (Wayman, 1982). In addition, many of the U.S. schools offer baccalaureate degrees in dental hygiene as well as the two-year diploma.

The need for a professional organization was realized in 1923 with the establishment of the

American Dental Hygienists' Association (Watterson, 1983). The ADHA has become a strong voice for dental hygiene in the United States and has provided a great deal of leadership for dental hygienists throughout the world. Some of the most significant ADHA achievements have been in the areas of curriculum standardization, accreditation and legal recognition of the profession (Fales, 1975).

2. The Canadian Beginning

Legal recognition of dental hygiene as a health occupation by provincial and territorial authorities in Canada began with Ontario in 1947 and was completed with Newfoundland in 1968 (See Table 2.1). Nineteen forty-nine was a landmark year in the history of dental hygiene in Canada because, as far as can be ascertained, dental hygiene officially began that year.

In 1949, on the initiative of Miss Mona Wilson, the Director of Public Health Nursing in the Prince Edward Island Department of Health, bursaries were provided through National Health Grants for three young women (Dorothy Peters, Annabel Allen, and Thelma Read) to study dental hygiene at the Forsyth School for Dental Hygienists in Boston (Wilson, undated). Many of the first dental hygienists employed in Canada received bursary assistance through National Health Grants. These grants were administered by the provinces and were often used for the education of health professionals who in return agreed to a period of service in provincial public health departments.

Also in 1949 Mary Brett, a graduate of the University of Minnesota School of Dental Hygiene, was registered in Saskatchewan, becoming Canada's first registered dental hygienist (Jones, 1979). In 1950 Andrée Hébert (later Brunelle) graduated from the dental hygiene program at Columbia University in New York with a Bachelor of Science degree and was employed by the Department of National Health and Welfare in Ottawa (Brunelle, 1983). Employment of dental hygienists in the Department has been almost continuous since then. The following year Hébert joined the Faculty of Dentistry at the University of Toronto to become the founding director of the first dental hygiene education program in Canada (Johnson, 1982).

Since 1951 the number of dental hygiene education programs at the diploma level in Canada has grown to 27 in 1987. In addition, there are two baccalaureate programs located at the University of Montreal and the University of Toronto. The founding director of the first educational program in a province is identified in this chapter.

Table 2.1

Legal Recognition of Dental Hygiene as a Health Occupation in Canada, by Provincial and Territorial Authorities and Year

Province/Territory	Year
Ontario	1947
Saskatchewan	1948
Prince Edward Island	1950
British Columbia	1951
Manitoba	1952
New Brunswick	1953
Nova Scotia	1955
Yukon	1958
Alberta	1959
Quebec	1962
Northwest Territories	1967
Newfoundland	1968

Ontario

Initial efforts to provide legal recognition for dental hygiene in Ontario met with much opposition from some segments of the dental profession (Royal College of Dental Surgeons of Ontario, 1976), but the Dentistry Act was amended in 1947 to include a section on dental hygiene practice and Ontario became the first province to legally recognize dental hygiene. However, the first dental hygienist was not licensed in Ontario until July, 1951. At the same time the establishment of a course in dental hygiene was being discussed by the University of Toronto, but physical accommodation was a problem because of the numbers of ex-servicemen who were registered in dentistry. The Directors of the Royal College of Dental Surgeons continued to press for the establishment of a dental hygiene education program and finally, in 1951, the Senate of the University of Toronto adopted the recommendations of the Faculty of Dentistry that a two-year course leading to a diploma be established. The program, with funding from the W.K. Kellogg Foundation, began in September of 1951, accepting a class of six students (Royal College of Dental Surgeons of Ontario, 1987, 1976). The first director was Andrée Hébert (later Brunelle).

The education of dental hygienists in the Canadian Armed Forces began in 1956 in Ottawa with this program moving to the Canadian Forces Dental Services School at Base Borden, Ontario in 1957 (Mountain, 1982).

Eleven dental hygiene programs were established in the mid-1970s in the Ontario Colleges of Applied Arts and Technology. In September, 1982 Algonquin College in Ottawa initiated the first French-language dental hygiene education program in Ontario. A 50 per cent French program is slated for Cambrian College in Sudbury for September, 1988.

Saskatchewan

Legal recognition for dental hygienists in Saskatchewan was obtained in 1948. As previously mentioned, the first dental hygienist known to be registered to practise in Canada was Mary Brett, in 1949. Shortly afterward, the Dental Health Division of the Saskatchewan Department of Public Health utilized National Health Grants to send young Saskatchewan women to dental hygiene programs in the United States or to the University of Toronto. Upon their return, these new graduates were employed in various health regions in the province in preventive programs involving dental health education, oral prophylaxis, and topical fluoride applications for children (Johnson, 1982). It is interesting to note that the initial thrust for the establishment of dental hygiene in Saskatchewan, as in many other provinces, came not from the private sector, but from public health.

In 1979 the Wascana Institute initiated a dental hygiene program specially designed for dental (nurse) therapist graduates thereby enabling dental therapists to become licensed as dental hygienists.* The first director of this program was Nancy Fedder.

Prince Edward Island

Dental hygiene was legally recognized in Prince Edward Island in 1950. As mentioned earlier, National Health Grant bursaries were given to three women to study at the Forsyth School for Dental Hygienists in Boston in 1949. Forsyth, at that time, had a one-year course of studies. In 1950, the graduates returned to Prince Edward Island and were employed by the Dental Division of the Department of Health, which had just appointed a Director of Dental Services, Dr. Brian O'Meara. Prince Edward Island was the first province to employ dental

* Dental therapists are educated to provide restorations, extractions and preventive dental services to selected clientele under prescription from a dentist.

hygienists in a department of health. A total of eleven dental hygienists who were trained under National Health Grants at Forsyth, returned to work for the Prince Edward Island Department of Health. Subsequently, dental hygienists from Prince Edward Island received their education at the University of Toronto or Dalhousie University (Wilson, undated).

Prince Edward Island continued to pioneer dental hygiene in public health; it was the first province in 1969 to license and to employ dental hygienists with expanded duties in restorative dentistry, following a summer training program at Dalhousie University. It was also the first province to employ expanded-duties hygienists in private practice, initially as part of a research project in 1969 (Romcke, 1972).

British Columbia

Dental hygiene was first recognized by the College of Dental Surgeons of British Columbia in 1951, when legislation was drawn up. An examination for licensure was given to a dental hygienist from the University of Oregon in 1952. However, she only remained in British Columbia for a short time. Two other dental hygiene graduates from the University of Oregon took the licensing examination in 1953 and Jo Gardner and Helen Balanko became the first dental hygienists to be employed in private practice in the province. Prior to 1970, the majority of dental hygienists in British Columbia were graduates of programs located in the western United States. In 1968, the University of British Columbia began a dental hygiene program within its new Faculty of Dentistry, and graduated its first class in 1970 (Kline, 1981). The first director was Margaret Robinson. In 1978, as a result of the addition of local anaesthesia to the Rules and By-laws of the College of Dental Surgeons of British Columbia for dental hygienists, the dental hygiene program at University of British Columbia (UBC) became the first in Canada to include local anesthesia as a competency for dental hygiene practice. In 1986 the dental hygiene program at UBC was terminated and a new program was instituted at the Vancouver Community College. The College of New Caledonia in Prince George started a dental hygiene program in 1987.

Manitoba

Some dental hygienists in Canada were employed as dental assistants, as in the case of Kay Peschel, the first known dental hygienist in Manitoba, who was employed as a dental assistant until 1956, when she began working for the provincial department of public health. The Manitoba Dental Association records on registration and licensure of dental hygienists began with By-law IV to the Dental Association Act in 1952. This Act was amended in 1960 to include expanded duties for dental hygienists in prosthetics, an effort to stave off legal recognition of denture therapists (Manitoba, 1981).

The School of Dental Hygiene at the University of Manitoba, Faculty of Dentistry was established in 1963 with Margery Forgay as Director. Dixie Scoles was the first full-time assistant professor and clinic director in the program. It was the third university-based program in Canada to be assisted by a Kellogg Foundation grant.

New Brunswick

Officials in the dental public health program were also responsible for dental hygiene becoming legally recognized in New Brunswick in 1953, when Margaret Berry (later MacLean), a B.S. graduate from the dental hygiene program, Columbia University, New York, became the first dental hygienist in that province. At a later date she was founding director of the School of Dental Hygiene, University of Alberta.

Nova Scotia

Dental hygienists were first recognized legally in Nova Scotia in 1955, through an addition to the Dental Act of Nova Scotia. This Act was prepared by Dr. Gordon Dawson, the Dental Director of the Dental Health Division of dental hygienists in clinics in three different counties. The School of Dental Hygiene at Dalhousie University was founded in 1961 and its first director was Janet Burnham. The Dalhousie program was the second university-based program in Canada to be assisted by a

Kellogg Foundation Grant. The Act governing dental hygiene was revised in 1967 and Nova Scotia became the first province to list only the prohibitions of dental hygiene practice instead of listing permitted functions.

Yukon Territory

Dental hygienists are licensed in the Yukon Territory by virtue of an ordinance to amend the Dental Profession Ordinance constituted in 1954 (Hancock, 1983).

Alberta

In Alberta there was early disagreement over the advisability of recognizing dental hygienists. As early as the 1920s some dentists in Alberta were lobbying for an oral prophylactician, or a person with skills similar to the Fones graduates. There was considerable opposition from the Board of Directors of the Alberta Dental Association at the time (MacLean, 1981). In the early 1950s, the University of Alberta, Faculty of Dentistry took some definite action to establish a school of dental hygiene with financial assistance from the W.K. Kellogg Foundation. This was opposed by the provincial government which wanted a program to teach New Zealand-type dental nurses. Much discussion ensued and finally in 1959 the government drew up the Dental Auxiliaries Act, and asked the University of Alberta to prepare dental auxiliaries who would be employed in the public health programs (MacLean, 1987, 1981). Although financial assistance was offered by Kellogg for the proposed program in the 1950s, no funding was given for the 1961 program. The first students were accepted into the program in 1961 and each student was committed to bursary assistance from National Health Grants. The graduates of the early classes received both dental hygiene diplomas and dental auxiliary certificates. (MacLean, 1987).

Before the establishment of the School of Dental Hygiene in Alberta, women were recruited and sent to schools in the United States on National Health Grant bursaries, returning to serve in various public health programs in the province. The first dental hygienist in Alberta was Joan Engman who graduated from the University of Michigan and returned to the Calgary Health Department in 1951 (MacLean, 1981).

Quebec

Dental hygiene was not legally recognized in the province of Quebec until 1962*. Nevertheless dental hygiene education might have had its Canadian beginning in Quebec in the late 1940s if the efforts of Dr. Ernest Charron, Dean of Faculty of Dental Surgery at the University of Montreal had been successful. Dr. Charron wished to initiate a dental hygiene program at the University of Montreal and would have been able to secure funding from the Kellogg Foundation through Dr. Phillip Blackerby, Kellogg's Director of Educational Programs, in 1948. In addition to the availability of funding, there was also space within the new dental facility which could be used for a dental hygiene clinic. Most important of all was the availability of a program director, Andrée Hébert (later Brunelle), a graduate of Columbia University. Dean Charron consulted with leaders in the dental profession who were also in favor of a dental hygiene school. Insurmountable opposition, however, came from faculty responsible for training public health dentists in the School of Hygiene who were concerned that a dental hygiene school would create confusion among the public and the government, and would be a deterrent to the development of public health. It was feared that dental hygienists would appear as substitutes for public health dentists. Thus the notion of a dental hygiene program was defeated in the University Senate and no further activity in this area was realized for over twenty years (Lussier and Scoles, 1974).

Before 1970, there were fewer than twenty dental hygienists working in Quebec. All were anglophone graduates of programs in other provinces or the United States. With the

* In the Executive Summary of this report published in March 1986, it was erroneously stated that dental hygiene was recognized legally in Quebec in 1946.

steady demand for dental care and the advent of a children's dental care plan in Quebec, the dental profession felt the need for more dental hygienists. The Quebec dental plan was written into legislation in 1971 but not implemented until 1974. It was difficult to attract dental hygienists to Quebec from other provinces because of the language barrier, and it became clear that francophone dental hygiene programs were needed. In 1971 the Faculty of Dentistry at the University of Montreal began a three-year degree program to educate dental hygienists. The program was established by the then current Dean, Dr. Jean-Paul Lussier and Dr. Geneviève Cuzak with the first director, Dixie Scoles, arriving in 1972. The program also had an education component so that the graduates could become faculty members in the proposed dental hygiene programs in the Collèges d'enseignement général et professionnel (CEGEPs). This basic dental hygiene degree program produced graduates between 1974 and 1979, when it was replaced by a post-certificate program open to dental hygiene graduates of CEGEPs. In 1986-87 there were eight dental hygiene programs in the CEGEPs. During the period 1975 to 1980 the CEGEPs graduated 900 dental hygienists (Lussier, 1981).

Quebec dental hygienists are unique in Canada in that the Quebec government, in revising the legislation governing all professions gave dental hygiene the legal status of a profession. The Corporation professionnelle des hygiénistes dentaires du Québec (Professional Corporation of Dental Hygienists of Quebec) formed in February 1975, transformed dental hygiene into an autonomous profession with its own board and regulations (Dussault, 1976). The Quebec Government, however, determines the range of dental hygiene functions and the level of supervision required (Aitken, 1976; Lussier, 1981).

Northwest Territories

Dental hygiene was legally recognized in the Northwest Territories in 1967.

Newfoundland

Dental hygienists were employed in Newfoundland prior to governing legislation which came into effect in 1968 (O'Driscoll, 1981). Gayle O'Driscoll a University of Toronto graduate, was first employed in the public health field in this province in 1957, and also became the first dental hygienist to be employed in a private dental practice in 1967. As well, there were dental hygienists who worked with the Grenfell Mission in St. Anthony, Newfoundland and in Labrador but none of the early records concerning their employment are available. It was only when the new Dental Act was enacted in 1968 that the dental hygienists employed by the Grenfell Mission as well as other dental hygienists in the province became registered.

3. Recent Developments

Dental hygiene since the end of World War II in 1945 has been profoundly influenced by two related phenomena. The first is the expansion of dental hygiene from being located exclusively in the United States to a movement which is now virtually world-wide, existing in more than fifty countries located on six continents (Fédération dentaire internationale, 1981). There are approximately 75,000 dental hygienists working throughout the world (Fédération dentaire internationale, 1981). There is now a widespread acceptance of dental hygienists as providers of a wide range of primarily preventive procedures, and a recognition that this is a cost-effective way of providing services of high quality.

The second phenomenon is the investigation of extended functions for dental hygienists, and in some cases the corresponding changes in dental hygiene practice. The impetus for such investigations was a perceived dental manpower shortfall in meeting demands for treatment, and the anticipation that such a shortfall would persist for several decades (Born, 1983). Canada provided some of the early research in this area; for instance, in 1962 dental hygienists in the Canadian Armed Forces were taught to provide additional restorative functions and were called dental therapists. The Faculty of Dentistry at Dalhousie University and the Dental Division of the PEI Department of Health collaborated on a human resources study of civilian dental hygienists with restorative

skills similar to the Canadian Armed Forces dental therapist, in both public health and private practice settings. The University of Manitoba educated dental hygienists to perform certain prosthetic dentistry functions to the same level of competence required of dental students. This was accomplished without increasing the length of the two-year dental hygiene program or compromising the curriculum.

Similar studies in the United States were conducted at Forsyth (Lobene, Hein, 1969) and the University of Kentucky. In some provinces in Canada, these studies resulted in changes in the definition of dental hygiene practice. Although interest in expanded functions for dental hygienists dropped suddenly when the expected dental manpower shortages did not develop, dental hygiene practice had become redefined in some provinces. Thus, the evidence for the practical possibility of dental hygienists becoming providers of a wider range of dental services had been well established.

4. Professional Organizations

The University of Toronto had an active alumnae group which formed the first formal dental hygiene professional organization in Canada. This group also formed a nucleus for a national association. In May 1963 in Toronto, at a meeting of the University of Toronto dental hygiene alumnae and other interested dental hygienists, the formation of a national organization of dental hygienists was discussed. With the combined efforts of dental hygienists in Alberta and Ontario the first Canadian dental hygiene convention was held in Edmonton the following year (Girardin, 1980).

The Canadian Dental Hygienists' Association was officially constituted at a meeting in Quebec City in 1965. The first CDHA president was Jill Dossett (Canadian Dental Hygienists' Association, 1980). The initial constituent (provincial) dental hygiene associations which comprised the Canadian Dental Hygienists' Association were Ontario, Nova Scotia, Alberta, and Manitoba. The year of establishment for other constituent associations were British Columbia, 1967; Saskatchewan, 1970; Quebec and Prince Edward Island, 1972; New Brunswick, 1974; and Newfoundland, 1978. Thus, by 1978, the national organization was representative of all ten provinces (Canadian Dental Hygienists' Association, 1980). Some of the larger provincial associations have divided into component societies: in 1983 Ontario had 21 component groups, British Columbia had four, and Alberta had two.

The Canadian Dental Hygienists' Association and its provincial constituent associations have assumed prominent and influential roles in the development of dental hygiene in Canada in the two decades since its establishment. Some of the CDHA activities include presentation of a brief to the Federal Government Ad Hoc Committee on Dental Auxiliaries in 1968 (Canadian Dental Hygienists' Association, 1968); participation in the CDA Conference on Dental Auxiliaries at Banff, 1974; hosting the Seventh International Symposium on Dental Hygiene in Vancouver in 1979; preparation and presentation of a brief to the Health Services Review Commission, 1979; nominating members for the Working Group on the Practice of Dental Hygiene in 1981; providing major funding for the first Conference on Dental Hygiene Research in Winnipeg in 1982; and holding a series of pre-convention workshops commencing in 1978 on such themes as organizational development, continuing education, dental hygiene education, and portability of licensure. The Canadian Dental Hygienists' Association has also contributed to the Canadian Dental Association accreditation process, has conducted surveys regarding such questions as portability, and has cooperated with Statistics Canada in collecting data on dental hygienists in Canada.

5. Landmark Events

Some events previously mentioned are sufficiently significant to warrant further comment. In 1950, a very early stage in the development of dental hygiene in Canada, a full-time dental hygienist was hired by the Department of National Health and Welfare in Ottawa (Brunelle, 1983). There has been nearly continuous employment of a dental hygienist in the Department since then. Over the years the

titles of these dental hygienists have varied somewhat and the roles have progressed from the early clinical and technical phases to a position of consultation and research at a senior level.

In 1968 the Department of National Health and Welfare convened the Ad Hoc Committee on Dental Auxiliaries, chaired by Chief Justice D.C. Wells of Ontario. The Committee was composed of dentists representing private practice, public health, dental education and dental auxiliary education, a representative of the broad field of public health, a member representing consumers and two ex-officio members from the Department of National Health and Welfare. The president of the Canadian Dental Hygienists' Association presented a brief to the Committee in October 1968 (Canadian Dental Hygienists' Association, 1968). This report was especially significant in the development of extended duties for dental hygienists in the area of restorative dentistry (Ad Hoc Committee on Dental Auxiliaries, 1970).

In January of 1974 the Canadian Dental Association sponsored the Conference on Dental Auxiliaries at Banff, Alberta. Over 120 participants and leaders attended, representing the Canadian Dental Association, corporate members of the Canadian Dental Association, licensing boards, provincial and federal departments of health and other agencies, the Canadian Dental Hygienists' Association, the Canadian Dental Nurses and Assistants Association, dental technicians associations, dental specialties, faculties of dentistry and schools of dental hygiene, dental assisting courses, and other groups such as the American Dental Association, the American Dental Hygienists' Association, the Canadian Fund for Dental Education and the Association of Canadian Faculties of Dentistry. Keynote speakers focused on health care in Canada and the place of dentistry in the health care system and oriented the group to future perspectives on dental health care. Workshop topics centered on the role of dental auxiliaries, the classification and functions of auxiliaries, implications for the dental profession and guidelines for implementing change. The conference was a unique event in its broad representation, ambitious agenda, and the free and wide-ranging discussion which took place. Conference organizers had carefully and successfully structured the meeting to overcome communication barriers based on hierarchies in the dental field. Although not designed to produce specific recommendations, there was considerable consensus in identification of dental auxiliary-related problems such as lack of vertical and horizontal career mobility, the need for greater communication between dentistry and dental auxiliary groups, the necessary levels of supervision, the lack of a mechanism for quality review, the need for dental auxiliary representation on bodies making policies which affect them, and problems related to continuing education.

The International Liaison Committee on Dental Hygiene was founded in 1970 and included representatives of national associations for dental hygienists from seven countries. The Canadian Dental Hygienists' Association was a founding member (Dimitri and Voris, 1980). One of its primary activities is the mounting of periodic symposia, the first of which was held in Italy in 1970 (Leitch, 1980). The Seventh International Symposium on Dental Hygiene sponsored by the Canadian Dental Hygienists' Association, was held in July, 1979 in Vancouver, British Columbia. It was the first such symposium to be held in North America, and had the largest registration up to that date with over 600 participants representing 13 countries (Dimitri and Voris, 1980). The theme of the 1979 Symposium, Life Long Learning, was augmented by a post-symposium workshop organized and funded by CDHA on the development and delivery of continuing education programs for dental hygienists. Continuing education chairpersons and other selected dental hygienists from every province, as well as some dental hygienists representing European countries participated in this two-day event, which gave an important impetus to continuing education for dental hygienists in all provinces (Dimitri and Voris, 1980).

Evolving from the International Liaison Committee, the International Dental Hygienists' Federation was founded June 28, 1986 during the Tenth International Symposium on Dental Hygiene, in Oslo, Norway. Representatives of Canada, Japan, Netherlands, Norway, Sweden, United Kingdom and United States had worked

for several years to make this new organization possible and functional. They were joined at the chartering by new member countries of Australia, Denmark and Switzerland. Officers of the Federation are Wilma Motley (U.S.A.), President, Patricia Johnson (Canada), Vice-President and Jo Gardner (Canada), Secretary/Treasurer. The objectives of the organization are to promote access to quality preventive oral health services to all peoples; to represent and advance the profession of dental hygiene on a non-governmental, world-wide basis; to promote and coordinate the exchange of knowledge and information about the profession and its education and practice; to raise the level of awareness of the public that oral disease can be prevented through proven regimens; and to foster the exchange of dental hygiene human resources. Canada will host the Eleventh International Symposium on Dental Hygiene in Ottawa in June, 1989. (International Dental Hygienists' Federation, 1987).

In 1979 a federally-sponsored commission under the chairmanship of Justice Emmett Hall commenced a review of health services in Canada. In April 1980 the executive of the Canadian Dental Hygienists' Association presented a brief at the commission hearings in Halifax. The brief contained 14 recommendations dealing with research in dental care delivery, the regulation and supervision of dental hygienists, the necessity for practice standards and quality assurance mechanisms, the improvements in dental hygiene education and accreditation systems, and a wider role for dental hygienists in health promotion and other community dental health activities (Canadian Dental Hygienists' Association, 1980).

The establishment of the Working Group on the Practice of Dental Hygiene may also be regarded as a landmark event. This federally-sponsored expert committee which was formed in 1981 has eight dental hygienist members, five dentist members and is chaired by a dental hygienist.

As part of its deliberations, the Working Group established a Sub-committee on Research which is described elsewhere in the report. One of the chief activities of the research sub-committee was to plan, in cooperation with the University of Manitoba School of Dental Hygiene, the first conference held in the world on dental hygiene research. Funding for the 1982 Conference was contributed by the Canadian Dental Hygienists' Association, the Quebec Dental Hygienists' Association, the Canadian Fund for Dental Education, the National Health Research and Development Program and the Health Services Directorate in Health and Welfare Canada, and the Faculty of Dentistry, University of Manitoba. Fourteen distinguished researchers and consultants from across Canada and the United States served as conference leaders. Forty-two dental hygienists representing education, public health, hospital and private practice settings registered as participants. The conference format was designed to facilitate small group discussion and individual consultation with leaders as well as to provide for presentation of papers.

In the 1950s dental hygienists began to participate in research endeavors, applying their interest and knowledge in dental hygiene to other areas such as nutrition, epidemiology, education, behavioral sciences, periodontology, and dental materials. While this development was encouraging, research participation tended to be episodic and isolated from similar work being done by other dental hygienists. The conference was intended to break down such isolation and to increase the dental hygienist's awareness of many research questions of potential interest to dental hygiene investigators (Lussier, 1983).

Currently there is an increased involvement of dental hygienists in a wide variety of research activities. In addition, many dental hygienists are undertaking research preparation.

6. Conclusions

The foregoing brief examination of the development of dental hygiene in Canada in the thirty-eight-year period between its beginning in 1949 and 1987, reveals remarkably rapid growth and professional maturation. This reflects such influences as the extended post-war economic boom, the recognition by the dentist of the economic and dental health

benefits of dental auxiliary development and utilization and the public demand for dental care. It also reflects the able, far-sighted and dedicated leadership of dental hygienists in their roles as professional organization leaders, educators, public health planners, consultants and practitioners.

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III

HUMAN RESOURCES

1. Introduction

In the 1960s the tenor of questions concerning human resources in the dental health field in North America generally related to the then present and projected shortages of dental health personnel (McFarlane, 1965). Post-war population increases, greater general affluence, and increased public interest in dental health had combined to produce drastic increases in demand for services. At the same time improved technology and better dental practice management strategies were not adequate in increasing the availability of dental care. As a result, it was felt that greatly increased numbers of dental personnel would be required. Furthermore, it was thought that not only would more dental hygienists be required, but that dental hygienists should be formally educated and permitted to provide a much broader range of dental services - so-called expanded functions (Ad Hoc Committee on Dental Auxiliaries, 1970).

By the 1970s the situation had reversed itself and the concerns then expressed were of a growing surplus of dental health personnel, in particular of dentists. A report on the human resources in the dental health field (House, 1980) stated that "Dentistry in Canada is at an historic turning point. We are moving from a situation of a chronic shortage of manpower to one of embarrassing surplus. The relative abundance of dental manpower is having a profound effect on incomes, the structure of private practice, and the delivery of dental services". Even though some areas continue to report a need for dentists, a report (CDA, 1982a) urged the dental profession to address the changing human resource picture beyond a redistribution mechanism that would not be simple to implement. Reductions in dental student enrolments have since been implemented. Although there was an over-supply of dentists by the 1970s, this was not the case for dental hygienists who continued to be in demand.

The growth in the supply of dentists was surpassed by an even greater rate of growth in the supply of dental hygienists. A Canadian report (Lewis et al, 1981) estimated the annual growth rate of dental hygienists from 1967 to 1979 to be about 26 per cent. A subsequent dental human resource supply study (CDA, 1982a) estimated that in the next twenty years, under present circumstances, "the growth in the number of dental hygienists and certified dental assistants will be so rapid that it will necessitate a very substantial change in the configuration of the dental team if all available licensed auxiliaries are to be employed". The number of graduates in Ontario between 1975 and 1985 has grown from 50 to 188 per year. In Quebec the number has grown from 12 in 1974 when the first graduates came into the labour market to 143 in 1985. On the other hand, a survey of 1982 graduates of dental hygiene programs in Ontario, where a tremendous growth of new dental hygiene graduates took place, revealed that nearly all the 1982 dental hygiene graduates obtained full-time employment after a reasonably short job search (Ministry of Colleges and Universities, 1983).

It is the purpose of this chapter to present some of the facts and figures related to recent dental human resource changes in Canada - especially in relation to dental hygiene practice - and to make some recommendations for the 1990s with respect to the human resources in dental hygiene.

2. Limitations and Sources of Data

This chapter will concern itself with dental hygienists and, to some extent, with dentists, who are the major employers of dental hygienists in Canada. It is recognized that other dental care providers exist in Canada. For example denturists, also called denture therapists or dental mechanics, are legally recognized in a number of provinces and provide services related to full-denture prosthesis. Dental nurses, now called dental therapists in all areas except Manitoba, were introduced into Canada

in order to meet treatment needs of under-serviced population groups in the Yukon and the Northwest Territories, on Indian reservations and in the provinces of Saskatchewan and Manitoba.* While their employment was initially restricted to government programs, and these remain the primary employers, Saskatchewan and Manitoba later permitted dental therapists to work for dentists in private practice as well. Certified dental assistants educated in such areas as rubber cup prophylaxis, topical application of caries preventive agents, rubber dam application, taking impressions for study models and taking of radiographs are recognized in a number of provinces. Most work in private dental offices, but some are employed in community dental health programs.

All of these persons act as intra-oral operators providing dental care services and, according to an overview of Canada's dental human resource situation (Lewis, 1977), influence current human resource concerns substantially. There is no accurate information available on the number of certified dental assistants at this time, and they are not discussed in this chapter.

It was not within the terms of reference or budget of the Working Group on the Practice of Dental Hygiene to carry out its own surveys related to such human resource questions as the number of dentists, dental hygienists and dental hygiene graduates or current dental hygiene profiles. Instead, figures were obtained from as many relatively current reports as possible. Fortunately, there has been an annual inventory** concerning health professionals from the Department of National Health and Welfare and the Statistics Canada annual and biennial surveys of dental hygienists. In addition, there have been some extensive dental and dental hygiene human resources surveys carried out by the Dental Health Care Services Research Unit, University of Toronto (Lewis, 1977, 1979), a Canada-wide survey for the Canadian Dental Hygienists' Association (Lewis, 1981), and by the Canadian Dental Association (CDA, 1982a,b,c). These reports are the primary sources of data for this chapter.

Unfortunately, some of the figures conflict from report to report. Often this is the result of the different times of year when the surveys were carried out (fall included that year's graduating class; spring did not) and/or accuracy of the mailing lists. Various data have been selected from different reports. While the resulting figures used in the tables may not be precise, certain trends are evident and can be assumed to be a true reflection of the present situation.

The primary factor to be remembered when reviewing these figures is that educational facilities for both dentists and dental hygienists were greatly increased in the past two decades in anticipation of a growth in population and demand for dental services which only partly materialized. The resulting changes have been so pronounced that there are mounting concerns as to what may happen if current trends continue.

3. Number of Dental Hygienists

Table 3.1 shows the number of licensed dental hygienists in Canada by province of licensure, and by year, 1966-1986, and Table 3.2 reports the average annual rate of growth in the number of dental hygienists in Canada in selected years, 1965-1985 while Table 3.3 shows the population per licensed dental hygienist by province of licensure, 1976-1986.

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* Dental therapists are educated to provide restorations, extractions and preventive dental services to selected clientele under prescription from a dentist.

** The title of the 1986 inventory was changed from Canada Health Manpower Inventory to Health Personnel in Canada

Table 3.1
Number of Licensed Dental Hygienists in Canada, by Province of Licensure and Year, 1966-1986

YEAR	NFLD	PEI	NS	NB	QUE	ONT	MAN	SASK	ALTA	BC	YUKON NWT	CANADA
1966	1	3	18	3	4	189	12	5	46	22	..	303
1967	0	2	31	3	8	297	24	14	60	37	..	476
1968	2	3	36	6	12	317	34	20	54	60	..	544
1969	6	7	42	6	12	335	46	23	61	79	..	617
1970	5	8	56	6	13	377	46	30	75	130	..	746
1971	8	8	65	4	11	423	69	29	78	154	..	849
1972	7	8	7	12	17	475	79	36[f]	100	183	..	987[f]
1973	9	12	55	18	26[f]	500	102	39	..	216	..	977[f,l]
1974	14	14	83	23	67	606	121	38	140	256	..	1 362
1975	14	14	87	23	138[b]	606	138	38	230	278	..	1 566
1976[a]	17	19	..	..	327[b,c]	711	153	26	367[e]	307	2	1 929[j]
1977[a]	18	21	..	31	415[b]	1 017	168	43	421[e]	364	2	2 500[k]
1978[a]	14	20	133	37	610[b,c]	1 266	193	49	481[e]	375	2	3 180
1979[a]	16	18	138	41	552[b,c]	1 476	195	49	536[e]	403	3	3 427
1980	20	22	141	45	692[b,c]	1 676	211	48	547[e,f]	457	3	3 862[f]
1981	22	22	143	52	703[b,c]	1 853	225	60	558[g]	483	4	4 125
1982	23	21	149	59	809[b,c]	2 041	273	66	555[h]	517	7	4 520
1983	26	20	170	60	940[b,c,d]	2 206	291	69	559[i]	573	5	4 919
1984	23	18	192	69	1 078[b,c]	2 386	308	83	573[f]	579	6	5 315
1985	20	18	221	79	1 188[b,c]	2 567	325	94	624[f]	614	8	5 758
1986	22	20	233	87	1 190[b,c]	2 789	348	99	628	641	7	6 064

Sources: Health and Welfare Canada - Canada Health Manpower Inventory 1976
- Health Personnel in Canada 1987

(a) Revised data obtained from provincial dental licensing authorities.
(b) From 1975 to 1986 data are as of the following year, i.e. 1975 data are as of March 31,1976.
(c) Excludes not practising in Quebec, and practising and not practising outside Quebec.
(d) The order in Council No. 1132-82 stipulating delegated acts to dental hygienists triggered a larger number of admissions than before.
(e) There is no licensing or registration authority for Dental Hygienists practising in Alberta.
(f) Estimate.
(g) Registration is not required, consists of graduates from the University of Alberta, and includes members, student members, non-members, and unaccounted/moved/retired.
(h) Revised estimate as of September 1982.
(i) Includes non-resident and student members.
(j) Total excludes Nova Scotia and New Brunswick.
(k) Total excludes Nova Scotia.
(l) Total excludes Alberta data.
.. Data not available.

The most remarkable feature of these figures is the tremendous increase in numbers in such a short period of time. Between 1965 and 1975, the number of licensed dental hygienists increased at an average annual rate of 22.2%. Although the increase slowed down slightly during the following ten-year period, the profession still maintained a 14.0% average annual growth. The greatest increase was in the period 1965-70, when the average annual increase was 28.7%. Over 70 per cent of Canadian dental hygienists entered the workforce in the ten-year period between 1975 and 1985 (Table 3.1). The rapid growth rate is not very surprising given the relative "newness" of dental hygiene as a recognized profession in Canada. In fact, it has been only since 1964 that dental hygienists in Canada as a whole have numbered over 100. The fact that this rapid growth has sprung from a very small base at the outset of the development of the profession of dental hygiene is significant. Due to an increasing focus on health promotion, changes in the dental health status of Canadians, the emergence of dental hygiene as a distinct discipline and other factors, a new demand was created for dental hygienists. In response, a rapid output of graduates had to be realized in order to fill this void. Provincial variations show that in 1985 more than 65 per cent of dental hygienists were in the provinces of Quebec and Ontario in contrast to 47.5% in 1975. This expansion is partly related to the enormous growth in educational programs in these two provinces and, more importantly, to the fact that almost two-thirds of the Canadian population lives in these provinces.

Table 3.2
Average Annual Rate of Growth* in Number of Licensed Dental Hygienists in Canada, for Selected Periods 1965-1985

Years	Change in Number of Licensed Dental Hygienists	Average Annual Percentage Change per cent
1965 - 1970	211 to 746	+ 28.7
1970 - 1975	746 to 1 566	+ 16.0
1975 - 1980	1 566 to 3 862	+ 19.8
1980 - 1985	3 862 to 5 758	+ 8.3
1965 - 1975	211 to 1 566	+ 22.2
1975 - 1985	1 566 to 5 758	+ 14.0
1965 - 1985	211 to 5 758	+ 18.0

Source: Health and Welfare Canada - Canada Health Manpower Inventory 1976, Health Personnel in Canada 1987

* The annual compounding method was used to compute the average annual rate of growth.

The formula is $\log (1 + r) = \frac{\log (Pn)}{(Po)}{n}$

Pn = the number at the end of the period
Po = the number at the beginning of the period
n = the time span in years
r = the annual average rate of growth

In Canada, the number of educational programs for dental hygiene has increased from only one in 1961 to 28 programs in 1987, the majority commencing in the seventies (Health and Welfare Canada, 1982)*. Table 3.4 shows the dramatic increase in the yearly output of dental hygiene graduates from less than 10 per year between 1953 and 1961 to almost 450 graduates in 1985. Table 3.4 also shows the percentage increase for the whole of Canada in five-year spans and shows major increases during the 1970-75 period. Since then rate of increase has slowed down.

The number of graduates increased by almost 75 times between 1960 and 1985. Table 3.4 also shows a sharp increase between 1974 and 1975 when the number of dental hygiene graduates nearly doubled. Table 3.5 provides the number of graduates of dental hygiene schools, by year and school of graduation in Canada between 1976 and 1986.

A research study (Lewis, 1981) into dental human resources in Ontario stated that "the data arising from this research show clearly that dental hygienist employment will suffer in

Table 3.3
Population Per Licensed Dental Hygienist, by Province and Territory of Licensure and Year, 1976-1986

Province	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Newfoundland	32 882	31 183	40 236	35 288	28 360	25 727	24 778	21 996	24 830	28 435	25 800
PEI	6 263	5 738	6 080	6 806	5 564	5 568	5 867	6 230	6 989	7 022	6 340
Nova Scotia	..	..	6 317	6 114	6 006	5 937	5 736	5 071	4 526	3 947	3 764
New Brunswick	..	22 158	18 654	16 924	15 460	13 371	11 873	11 763	10 283	8 994	8 166
Quebec	19 153	15 146	10 354	11 522	9 267	9 175	7 991	6 894	6 032	5 495	5 521
Ontario	11 694	8 267	6 695	5 786	5 131	4 676	4 293	4 016	3 759	3 534	3 301
Manitoba	6 695	6 132	5 325	5 246	4 850	4 575	3 812	3 611	3 444	3 286	3 089
Saskatchewan	35 754	21 877	19 327	19 500	20 085	16 232	14 915	14 432	12 120	10 743	10 213
Alberta	5 136	4 646	4 209	3 928	4 029	4 102	4 201	4 182	4 082	3 781	3 777
BC	8 096	6 943	6 859	6 542	5 947	5 743	5 421	4 946	4 945	4 696	4 540
Yukon	21 900	22 400	22 600	11 300	22 700	23 600	11 500	11 450	7 800	3 917	4 820
NWT	42 700	43 100	43 600	44 300	22 500	15 533	9 700	16 600	17 100	26 050	25 700
CANADA	12 005	9 367	7 435	6 978	6 246	5 935	5 466	5 061	4 721	4 389	4 205

Source: Health and Welfare Canada - Health Personnel in Canada, 1987
.. Data not available

* The figure of 28 includes the post-diploma programs at University of Montreal and University of Toronto, the Canadian Forces Dental Services School, and the Wascana Institute post-dental therapist program but not the program at St.-Jérôme which graduated its last class in 1979.

Table 3.4
Number of Graduates of Dental Hygiene Schools in Canada, by Province of Graduation and Year, 1953-1986 and Percentage Increase for Canada in Five-Year Spans

YEAR	NS	QUE	ONT	MAN	SASK	ALTA	BC	CANADA	PERCENTAGE INCREASE FOR CANADA IN FIVE-YEARS SPANS* Per cent
1953	-	-	5	-	-	-	-	5	
1954	-	-	6	-	-	-	-	6	
1955	-	-	8	-	-	-	-	8	
1956	-	-	9	-	-	-	-	9	
1957	-	-	8	-	-	-	-	8	
1958	-	-	14	-	-	-	-	14	
1959	-	-	9	-	-	-	-	9	
1960	-	-	6	-	-	-	-	6	1960-65
1961	-	-	8	-	-	-	-	8	+1,150
1962	-	-	16	-	-	-	-	16	
1963	5	-	38	-	-	19	-	62	
1964	10	-	46	-	-	19	-	75	
1965	10	-	45	9	-	11	-	75	1965-70
1966	10	-	43	13	-	16	-	82	+ 46.7
1967	7	-	47	14	-	16	-	84	
1968	12	-	41	12	-	21	-	86	
1969	11	-	38	18	-	20	-	87	
1970	14	-	40	18	-	19	19	110	1970-75
1971	19	-	47	20	-	24	15	125	+173.6
1972	20	-	56	23	-	25	20	144	
1973	15	-	49	24	-	25	20	133	
1974	18	12	53	24	-	38	19	164	
1975	19	162	50	25	-	38	19	313	1975-80
1976	20	180	80	26	-	32	21	359	+ 38.5
1977	20	190	205	20	-	32	20	487	
1978	20	199	251	20	-	32	20	542	
1979	19	153	208	26	-	35	20	461	
1980	19	123	192	23	12	35	19	423	1980-85
1981	17	94	185	24	10	33	19	382	+ 7.2
1982	18	153	196	28	11	43	20	469	
1983	25	146	178	28	10	39	20	446	
1984	27	158	169	24	11	30	20	439	
1985	28	143	188	23	11	35	19	447	
1986	32	170	202	29	10	40	20	503	

Sources: Health & Welfare Canada - Canada Health Manpower Inventory, 1970 and Canada Health Manpower Inventory, 1977, Health Personnel in Canada, 1987

\- Nil or zero

* Percentage increase is not provided for the 1955-60 period given the impact of the fluctuations in the small numbers involved.

Table 3.5
Number of Graduates of Dental Hygiene Schools, by Year and School of Graduation, Canada, 1976-1986

Universities	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Nova Scotia											
Dalhousie University	20	20	20	19	19	17	18	25	27	28	32
Quebec											
University of Montreal[a]	7	11	10	9	2	4	13	11	3	1	7
Édouard-Monpetit	41	23	21	20	17	12	23	21	22	18	21
François-Xavier Garneau[b]	21	32	35	24	27	13	27	26	29	29	25
John Abbott[c]	24	25	17	16	14	10	15	16	26	14	21
Maisonneuve	26	24	35	25	30	23	29	29	29	29	42
Saint Hyacinthe	13	17	24	16	16	17	21	22	23	23	30
Saint-Jérôme	20	40	26	17	-	1	-	-	-	-	-
Trois-Rivières	28	18	31	26	17	14	25	21	26	29	24
Ontario											
Colleges of Applied Arts and Technology											
Algonquin	24	39	39	32	30	30	26	32	27	30	36
Cambrian	-	-	16	15	17	16	19	14	9	16	17
Canadore	-	12	12	16	9	11	10	12	11	11	8
Confederation	-	10	11	-	11	-[d]	12	-	10	-	11
Durham	-	18	24	19	14	14	15	15	12	15	19
Fanshawe	-	22	16	16	15	16	16	15	15	16	13
George Brown	-	33	43	34	34	33	22	22	20	33	34
Georgian	-	9	14	12	7	10	11	9	9	8	10
Niagara	-	16	26	16	14	14	16	18	18	15	16
Seneca	-	15	16	15	16	16	16	14	12	16	12
St. Clair	-	27	28	22	17	17	21	17	21	19	22
Canadian Forces Dental School Borden	6	4	6	6	4	5	6	6	4	8	-
University of Toronto	50	-[e]	-[f]	5	4	3	6	4	1	1	4
Manitoba											
University of Manitoba	26	20	20	26	23	24	28	28	24	23	29
Saskatchewan											
Wascana	-	-	-	-	12[g]	10	11	10	11	11	10
Alberta											
University of Alberta	32	32	32	35	35	33	43	39	30	35	40
British Columbia											
University of British Columbia	21	20	20	20	19	19	20	20	20	19	20
TOTAL	359	487	542	461	423	382	469	446	439	447	503

(a) From 1976 to 1979, there were basic dental hygiene graduates, obtaining the degree of Bachelor of Science. From 1980 onward, there were post-basic diploma graduates in dental hygiene, and students may obtain 3 certificates (3 majors or concentrations) resulting in a bachelor's degree.

(b) Data for CEGEP François-Xavier Garneau have been revised.

(c) Diploma only, attestations not included.

(d) Dental Hygiene Program offered on alternate years only.

(e) Diploma Course discontinued.

(f) From 1979 onward, B.Sc. in Dentistry for dental hygienist diploma graduates only.

(g) The pilot program started in 1980, and is a post-diploma program for graduate dental therapists only.

- Nil or zero.

Source: Health and Welfare Canada - Health Personnel in Canada, 1987

the future unless the number graduating is curtailed or unless dental hygiene of the future is to become very much a part-time occupation". Despite the forecasts made by this study and other studies cited below, Ontario at the time of writing was experiencing an apparent shortage of dental hygienists. In response to requests made by the dental community, the Ontario Ministry of Colleges and Universities permitted an overall increase of 10-12% in the enrolment quotas for the dental hygiene programs in 1987. (Ministry of Colleges and Universities, Ontario, 1987). Quebec opened two new dental hygiene education programs in 1986 to meet a demand for dental hygienists in northern and western Quebec. British Columbia started a second dental hygiene education program in 1987 in the interior of the province, giving a clear indication of an increased need for dental hygienists in this part of Canada. Nevertheless, provinces should be assessing, on an ongoing basis, the employment opportunities for dental hygienists, including new graduates.

The ratio of dental hygienists to dentists may provide one reasonable means of assessing the supply of dental hygienists. Baseline projections from the Canadian Dental Association (CDA, 1982a,b,c) Manpower Supply Study indicate that if the status quo is strictly maintained (i.e. the number of dental and dental hygiene graduates, attrition and retention rates, or migration rates, for example, remaining constant) the current ratio of 0.32 dental hygienists per dentist in Canada could rise to 0.76 by the year 2001 (Table 3.6). Such baseline projections should be used cautiously, however, and are used most appropriately as planning tools with which to examine the effects of changes in these parameters. Furthermore, the ratio of dental hygienists to dentists may carry little meaning if the "desired" or optimum balance is not known.

Demand as expressed by the number of known vacancies for dental hygienists provides a proximate measure of unmet dental hygiene human resource requirements. National Job Bank statistics (EIC) give a relative measure, although partial, of such demand, as they represent hard-to-fill vacancies that are given national exposure by the employers after other recruiting techniques have proven ineffective. The monthly average count of vacancies for dental hygienists in the National Job Bank by province, 1982-86 and the number of new vacancies, 1983-86 are shown in Tables 3.7 and 3.8.

A study of health personnel in the four western provinces (Peat, Marwick, 1983) recommended that no new dental hygiene programs be established in western Canada, but that existing programs be maintained, with an increase in enrolment in the province of Alberta. In Ontario, based strictly on current figures and estimated projections, the Ontario Dental Association, the Royal College of Dental Surgeons of Ontario, and the Ontario Dental Hygienists' Association, recommended in 1982 that enrolment in dental hygiene programs be cut back (ODA, 1982). On the other hand, a survey of the 1982 graduates of dental hygiene programs offered by the Colleges of Applied Arts and Technology in Ontario found the proportion of employment, approximately five months after graduation, to be 90.8 per cent (Ministry of Colleges and Universities, 1983). In the few cases where the graduates were not employed and the lack of available jobs was not the main reason for such unemployment. The most frequently cited reason for not being employed was failure of the provincial licensure examinations of the Royal College of Dental Surgeons of Ontario. Furthermore, results of a survey of all Canadian dentists in 1984 indicated that only 35 per cent of private practice dentists employed one or more dental hygienists either full-time or part-time (Ellis, 1984). A breakdown of these data shows ample opportunity for further employment of dental hygienists in private practice along with new opportunities in alternative settings proposed in this report. The Canadian Dental Hygienists' Association Survey conducted in May 1987 and sponsored in part by the Professional Corporation of Dental Hygienists of Quebec and Patricia Johnson should provide more current data. This census survey of all dental hygienists in Canada is entitled Dental Hygiene in Canada - Current Profile and Future Directions and is expected to be published by the summer of 1988.

Table 3.6
Actual and Projected* Ratio of Dental Hygienists
Per Dentist for Selected Years
Between 1981 and 2001

Year	Atlantic	Quebec	Sask.	Ontario	Manitoba	Alberta	B.C.	Canada
1981	0.33	0.26	0.16	0.35	0.45	0.47	0.23	0.32
1986*	0.53	0.56	0.18	0.49	0.64	0.50	0.27	0.47
1991*	0.75	0.80	0.21	0.60	0.79	0.52	0.29	0.59
1996*	0.94	0.98	0.24	0.68	0.90	0.53	0.31	0.68
2001*	1.13	1.13	0.26	0.76	1.00	0.53	0.32	0.76

Source: House, R.K. - Canadian Dental Association Manpower Study Supply, 1982.

Table 3.7
Monthly Average Count of Vacancies for Dental Hygienists*,
in the National Job Bank, by Province, 1982-1986

	1982	1983	1984	1985	1986
Canada	25.8	21.2	22.9	25.1	36.3
Nfld		0.3	1.8	0.9	1.0
PEI					
N.S.	2.6	1.6	0.8	1.8	0.6
N.B.	1.2	2.0	1.3	0.7	3.3
Qué.	3.3	4.1	5.3	6.3	6.8
Ont.	3.6	4.5	6.7	6.3	13.0
Man.					0.5
Sask.	0.1				
Alta.	9.9	3.4	2.9	3.9	4.5
B.C.	10.2	5.3	4.3	5.2	6.3
Yukon	0.2	0.1	0.6		
NWT					1.0

* National Job Bank Canadian Classification and Dictionary of Occupation's (CCDO) Code #3157-110 for Dental Hygienists

Source: Employment and Immigration Canada. National Job Bank data.

N.B.: These are hard-to-fill vacancies that are given national exposure through an EIC on-line computer network. Vacancies are deleted after 30 days unless renewed.

Table 3.8
Number of New* Vacancies for Dental Hygienists
in the National Job Bank,
Canada and the Provinces, 1983-1986

	1983	1984	1985	1986	Year Missing***
Canada	106	109	122	135	17
Nfld.	3	4	2	2	
PEI					
N.S.	5	4	8	1	3
N.B.	2	1	3	6	1
Qué.	34	33	41	47	2
Ont.	21	24	21	32	2
Man.				1	
Sask.					
Alta.	13	14	22	13	4
B.C.	27	28	25	29	5
Yukon	1	1			
NWT				4	

* There is no double-counting.
** CCDO Code #3157-110
*** The year during which these vacancies were registered is unknown.

Source: Employment and Immigration Canada. National Job Bank Data.

4. Current Profile of Canadian Dental Hygienists

The study by Lewis (1981) provided rather extensive statistics on Canadian dental hygienists including the following data fundamental to dental hygiene human resource issues:

Dental hygienists in Canada are predominately female (over 97 per cent) and continue to be so despite the trend in other health professions where the dominance of one gender group is lessening both in admissions to educational programs and in the work force. Table 3.9 shows the percentage female : male distribution of dental hygienists in Canada from 1976 to 1983. If the predominance of women in dental hygiene is to be changed, recruitment programs should be developed to attract men into dental hygiene.

The average age of dental hygienists in Canada in 1983 was 30.1 years, with 60 per cent being married and 48 per cent with dependent children. Table 3.10 shows the percentage age distribution of dental hygienists in Canada from 1976 to 1983.

The history of employment of dental hygienists in Canada has been the subject of some persistent and misleading myths. The report prepared by Lewis et al in 1981 and based on 1979 data refutes many of these myths. Some examples follow:

Myth: Dental hygienists do not remain in the work force for an extended period.

Fact: The data show that relatively high proportions of past graduates of dental hygiene programs in Canada are still

Table 3.9
Percentage Female:Male Distribution of Dental Hygienists in Canada, by Selected Years, 1976-1983

	1976	1977	1978	1979	1981	1983
			per cent			
FEMALE	97.7	97.6	97.6	97.5	97.6	97.9
MALE	2.3	2.4	2.4	2.5	2.4	2.1

Sources: Statistics Canada, Health Manpower, No. 83-230, 1976 and 1977 and Health Manpower: Non-catalogued reports, 1978, 1979, 1981 and 1983.

Table 3.10
Percentage Distribution of Dental Hygienists in Canada, by Age Group and Selected Years, 1976-1983

Age Group	1976	1977	1978	1979	1981	1983
under 25	33.8	33.6	38.5	36.1	25.5	18.3
25 - 29	33.3	32.3	30.5	33.5	41.4	41.9
30 - 34	21.4	21.0	17.6	16.5	16.9	20.6
35 - 39	4.0	4.8	5.4	7.8	10.0	11.8
40 - 44	2.7	2.7	2.5	2.2	2.2	3.4
45 - 49	1.3	1.2	1.4	1.5	1.5	1.6
50+	1.3	1.4	1.2	1.2	1.5	1.8
not stated	2.1	2.9	2.8	1.2	1.0	0.6

Sources: Statistics Canada, Health Manpower, No. 83-230, 1976 and 1977 and Health Manpower, non-catalogued reports, 1978, 1979, 1981 and 1983.

active in the profession (Table 3.11). While, not surprisingly, 79.5% of those graduating in 1975 were reported as still active four years later, it is also true that 66.7% of those graduating in 1960 were reported as active in 1979. Furthermore, over half of the dental hygienists graduating in the periods 1950-59, 1940-49 and prior to 1940 were still active in 1979.

Myth: Dental hygienists get married, have children and drop out of the work force - the attrition rate due to marriage and child bearing/rearing is very high.

Fact: While there is a relationship between employment status and dependent children, it is not continuous or long--term. Nearly 42 per cent of Canadian dental hygienists employed at the time of the survey (1979) indicate they had worked continuously in dental hygiene, either part-time or full-time, with no months of unemployment. Sixty per cent of respondents were married and of these 72 per cent were working. Of the

48 per cent of married hygienists who had dependent children at home, 60 per cent were still active in dental hygiene. Of those dental hygienists not in the work force, 83 per cent indicated it was a temporary absence and usually had been out of the work force for one year or less.

Myth: Most dental hygienists work in more than one place of employment.

Fact: The survey results indicated that in 1979 81.5 per cent of dental hygienists worked in only one place of employment; 16.9 per cent had two work places and 1.6 per cent had more than two. Ontario and British Columbia had the highest percentage of dental hygienists with more than one work place - 24.9 per cent and 22.8 per cent respectively, with Quebec and Saskatchewan the lowest percentage - 5.1 per cent, and 5.7 per cent.

Myth: Most dental hygienists work part-time.

Fact: The survey results also show that almost 80 per cent of Canadian dental hygienists work four days or more per week. On average they work 4.3 days or 31.2 hours a week. Nearly one-half (49 per cent) work over 34 hours a week.

Table 3.11
Percentage of Active Dental Hygienists in Canada, by Year of Graduation, - 1940 - 1979

Year of Graduation	Percentage Active
-1940	50.0
1949 - 49	57.1
1950 - 59	66.1
1960	66.7
1961	60.0
1962	81.3
1963	56.3
1964	68.3
1965	54.8
1966	60.0
1967	69.4
1968	65.7
1969	70.9
1970	65.6
1971	64.9
1972	79.1
1973	72.3
1974	77.8
1975	79.5
1976	89.3
1977	93.6
1978	96.6
1979	96.2

Source: Lewis et al, Demographic and Employment Profile of Dental Hygienists in Canada 1979, 1981.

Table 3.12
Percentage Employment Distribution of Dental Hygienists in Canada, by Selected Years, 1976-1983

Employment Status	1976	1977	1978	1979	1981	1983
			per cent			
Employed in Dental Hygiene	78.0	79.6	81.2	80.8	82.4	81.0
Employed Outside Dental Hygiene	3.0	3.3	3.6	3.6	4.9	3.8
Unemployed	19.0	17.0	16.2	15.6	12.7	14.7

Source: Statistics Canada, Health Manpower, No. 83-230, 1976 and 1977 and Health Manpower, Non-catalogued reports 1978, 1979, 1981 and 1983.

These facts illustrate that the vast majority of dental hygienists in Canada are employed in dental hygiene. A markedly lower proportion is unemployed, while three to five per cent are reported to be employed in another field. Table 3.12 shows percentage employment distribution of dental hygienists in Canada for selected years from 1976 to 1983.

While Lewis et al (1981) indicated that 14 per cent of dental hygienists surveyed were not employed, data pointed out that only 15 per cent of the unemployed group were permanently out of the work force; nearly 60 per cent had been inactive one year or less and only 20 per cent had been inactive five years or more. Only a small number of unemployed dental hygienists were actively seeking employment. Approximately 85 per cent of unemployed dental hygienists retained their licensed status and as such represent a total of approximately 400 dental hygienists potentially available for the workforce.

The initial thrust for the development of dental hygiene as a profession in Canada came from provincial departments of public health (see Chapter II) followed by a growth, both absolute and relative, in employment in private dental practices. In 1965, 31 per cent of dental hygienists were employed in public health; by 1981 the percentage had decreased to 10 per cent (Johnson, 1982) although there was an increase in absolute numbers working in community health. Therefore, most of the foregoing dental hygiene employment information relates to private practice. Several reports over the past decade have recommended increased employment of dental hygienists in institutional and community health settings (Johnson, 1982).

For some positions other than private practice, education beyond the diploma level is specified as either necessary or highly desirable. In 1979 only a small portion of employed dental hygienists reported having attained additional educational credentials (Lewis et al, 1981). Since there are currently only two post-diploma programs in dental hygiene in Canada - University of Toronto and University of Montreal - and class sizes are small, most post-diploma credentials are in disciplines other than dental hygiene.

In the spring of 1983, the School of Dental Hygiene at the University of Manitoba conducted a survey on a research grant from the Department of National Health and Welfare to assess the manpower demand and desired skills for degree graduates in dental hygiene in western Canada (University of Manitoba, 1983). One hundred and eighty-three full-time and

seventy-four part-time positions were identified in educational, public health, institutional and other similar employment settings. Of the dental hygienists in these positions 76.4 per cent listed a diploma as their highest academic credential, 19 per cent listed a baccalaureate degree, and 4.6 per cent a master's degree. Only 4.2 per cent possessed a baccalaureate degree in dental hygiene. A baccalaureate degree, as a minimum, was required for 31.5 per cent of the full-time positions examined, but a majority of employers reported that they would require a degree for full- and part-time university and community college teaching positions, public health consultant positions, and public health supervisory positions, if candidates with a degree either in dental hygiene or related fields were more available. The survey instrument developed for this study may be of use in assessing similar human-resource demands in central and Atlantic Canada.

5. Number of Dentists

Private dental practitioners are the major employers of dental hygienists in Canada: over 82 per cent of dental hygienists in 1983 were employed in private dental practice (Statistics Canada, 1983). It is, therefore, necessary to examine the number of dentists and related issues as important influences on dental hygiene human resources even though it is possible that more opportunities will be available in alternative settings in the future.

Table 3.13 shows the total number of active, licensed dentists (full-time and part-time) in Canada by province of residence, for selected years between 1951 and 1986.

Table 3.13
Number of Active Licensed Dentists in Canada, by Province of Residence for Selected Years Between 1951 and 1986

YEAR	NFLD	PEI	NS	NB	QUE	ONT	MAN	SASK	ALTA	BC	YUKON[a] NWT[a]	CANADA
1951												4 912
1961												5 865
1971												7 453
1976	103	42	247	161	2 013	3 928	375	276	793	1 443	20	9 401
1977	106	47	283	172	2 187	4 170	410	292	880	1 489	22	10 058
1978	116	44	304	176	2 274	4 276	422	302	923	1 595	19	10 451
1979	111	42	311	180	2 362	4 410	429	310	980	1 603	25	10 763
1980	110	40	309	183	2 469	4 510	439	322	1 027	1 658	28	11 095
1981	123	40	314	196	2 580	4 637	443	335	1 057	1 730	29	11 484
1982	129	42	322	198	2 651	4 809	450	341	1 128	1 773	37	11 880
1983	128	40	339	203	2 732	5 027	468	346	1 165	1 786	37	12 271
1984	135	44	352	211	2 782	5 177	486	364	1 202	1 828	43	12 624
1985	137	46	373	214	2 855	5 327	497	366	1 234	1 926	52	13 027
1986	137	47	381	229	2 859	5 425	508	376	1 271	1 889	42	13 164

Sources: Health and Welfare Canada - Health Personnel in Canada, 1987
Lewis, D.W. - Canadian Dental Manpower - Supply, Distribution, Requirements, 1977

(a) Some dental service in the Territories is provided by dentists, included here, although resident in the provinces.

Table 3.14
Population Per Active Licensed Dentist in Canada and Percentage Change for Selected Years Between 1951 and 1986

Year	Population Per Dentist	Percentage of Change
		per cent
1969	3 055	-
1970	3 107	+ 1.7
1971	2 913	- 6.2
1972	2 883	- 1.0
1973	2 842	- 1.4
1974	2 659	- 6.4
1975	2 619	- 1.5
1976	2 463	- 6.0
1977	2 328	- 5.5
1978	2 262	- 2.8
1979	2 222	- 1.8
1980	2 183	- 1.8
1981	2 132	- 2.3
1982	2 080	- 2.4
1983	2 029	- 2.5
1984	1 988	- 2.0
1985	1 940	- 2.4
1986	1 937	- 0.2
1951 - 1961	2 791 to 3 047	+ 9.2
1961 - 1971	3 047 to 2 913	- 4.4
1971 - 1981	2 913 to 2 132	- 26.8
1981 - 1986	2 132 to 1 937	- 9.1

Sources: Health and Welfare Canada -
Canada Health Manpower Inventory 1980,
Health Personnel in Canada 1987

In terms of the percentage change in the number of active dentists in Canada, these figures reveal an increase of 40 per cent in the decade from 1976 to 1986, the result of new dental schools, increased enrolment in established schools and net changes in dentist migration.

The Canadian population, except for the period of 1951 to 1961, has not kept pace with the increase in numbers of dentists, resulting in a 26.8 per cent decline in the population: dentist ratio for the decade 1971 to 1981. Table 3.14 shows the change in the population:dentist ratio in Canada for selected years between 1951 and 1986 while Table 3.15 shows the population per active dentist by province of residence and year, 1976 to 1986.

Although an optimum population:dentist ratio is difficult to define, it is clear that the ratio has been decreasing steadily. Similarly, projections based on then-current data suggested a continuation of this trend. The following statements are representative of some literature on this subject during the early 1980s:

Table 3.15
Population per Active Licensed Dentist
by Province of Residence and Year,
1976-1986

Province	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Nfld	5 427	5 295	4 856	5 086	5 156	4 602	4 418	4 468	4 230	4 151	4 143
PEI	2 833	2 564	2 764	2 917	3 060	3 063	2 933	3 115	2 859	2 748	2 698
NS	3 369	2 953	2 764	3 713	2 741	2 704	2 654	2 543	2 468	2 338	2 302
NB	4 234	3 994	3 922	3 855	3 802	3 547	3 538	3 477	3 363	3 320	3 102
Que	3 111	2 874	2 778	2 693	2 597	2 500	2 439	2 372	2 337	2 287	2 298
Ont	2 117	2 016	1 982	1 936	1 885	1 868	1 822	1 762	1 733	1 703	1 697
Man	2 732	2 513	2 436	2 385	2 331	2 324	2 313	2 246	2 182	2 149	2 116
Sask	3 368	3 222	3 136	3 082	2 994	2 907	2 887	2 878	2 764	2 759	2 689
Alta	2 377	2 223	2 193	2 149	2 146	2 165	2 067	2 007	1 946	1 912	1 866
BC	1 722	1 697	1 613	1 645	1 639	1 604	1 581	1 587	1 566	1 497	1 540
Yukon	2 737	2 489	2 511	1 883	1 892	1 815	1 643	1 636	1 560	1 237	1 854
NWT	3 558	3 315	4 360	3 408	2 813	2 913	2 109	2 165	1 832	1 579	1 772
CANADA	2 463	2 328	2 262	2 222	2 174	2 132	2 080	2 029	1 988	1 940	1 937

Source: Health and Welfare Canada - Health Personnel in Canada 1987

- in comparison to 1961 there are now nearly 1,000 fewer potential patients per licensed dentist (CDA, 1980);

- by 2001 the ratio of dental hygienists to each dentist in Canada will grow from the current level of 0.32 to 0.76 - an increase of over 200 per cent (CDA, 1982a,b,c).

It is interesting to note that even though there is purported to be a surplus of dentists, evidence of aggressive competition for patients is absent. Born (1983) attributes this to "the rigidly socialized nature of the profession and the economic control it has, which enables dentists to protect themselves by avoiding a truly competitive, free enterprise market". Thus, instead of increased numbers of dentists resulting in increased advertising, more extensive provision of dental services by personnel other than dentists and active marketing of dental services to the approximately one-half of Canadians who do not receive dental care each year, "each dentist tends to carve out his or her own share of the local market" (Born, 1983).

Whatever the change or lack of change in active marketing of dental services, it is apparent that human resources planning should be fully cognizant of dentist human resources concerns in dentistry and the plans in dental hygiene being made to address these concerns.

6. Additional Concerns Related to Human Resource Requirements in Dental Hygiene

While the foregoing evidence paints an uncertain picture if the number of dentists continues to proliferate, projections are based on assumptions which may not be supported by empirical evidence. In the case of dental hygiene this is especially true because many human resources studies have been conducted for dental organizations, and human resources observations and recommendations have been heavily influenced by the political and economic interests of the recommending body.

Indeed, the current activity of dental human resources planning is based on several assumptions which are open to question: that the pattern of dental disease will remain as at present; that there will be little increase in government or private third-party payment dental programs; that the present range of services provided by dental health personnel other than dentists will not change; and that the pattern of delivery of dental services will be unaltered.

In contrast to these assumptions, the dental research literature indicates a decrease in dental caries and a resulting retention of teeth which may lead to increased attention to periodontal disease. Prevention and early treatment of periodontal disease are major roles for dental hygienists either in private practice or public programs designed to address this problem.

In addition, Canada is experiencing a population shift: an increasing percentage of persons over 65 and a decreasing percentage of younger children. This, combined with the fact that people are retaining their teeth longer, increases the need for well-designed preventive programs, which can be staffed by dental hygienists. Such programs include regular scaling and prophylaxis, topical application of fluorides, nutritional counselling and oral hygiene instruction, all of which are services provided by the dental hygienist.

With a growing need for preventive programs, one must question whether all such programs can or will be provided primarily in private dental practice. There are some indications from provincial governments of an increased concern about access to dental health care. Institutions such as extended care facilities, correctional institutions, hospitals, facilities for the mentally and physically handicapped, schools, and community health centres are locations where appropriately-educated dental hygienists could provide many of these services. The human resources assessment study by the University of Manitoba (University of Manitoba, 1983) indicated some additional and particular dental hygiene skills that would be utilized in such settings.

If governments decide that the community has a broader responsibility in the area of dental health care than is the case at present, the control of provider costs will also be an important factor. Dental hygienists can be less costly than dentists as providers of preventive services and of some therapeutic services. The assumption in human resources forecasts that the provision of dental services by dental personnel other than the dentist will remain constant, and that the pattern of delivery of dental services will be unchanged, automatically influences human resources studies by affecting investigators' perceptions, and stifles more flexible approaches to human resources questions.

While the number of dental hygienists has increased dramatically in the last decade, there is no demonstrated surplus of dental hygienists. In 1987-88 some provincial governments have raised concerns about a shortage of dental hygienists in their jurisdictions. In the province of Alberta, dental hygienists were identified as the occupational group with the highest vacancy rate in a 1987 survey of health and social service employers (Alberta Health and Social Services Disciplines Committee). As

noted earlier, Ontario increased its enrolment of dental hygiene students (Ministry of Colleges and Universities, 1987). This continuing demand is evident by the fact that those dental hygienists who are seeking employment are able to obtain positions unless they insist on self-imposed restrictions e.g. refusal to relocate, type of office. In addition, if future evidence clearly demonstrates a surplus, the supply of dental hygienists can be reduced quickly by cutting back the intake into the two-year educational programs. In order to allow such responses to occur, and yet to maintain a mechanism for increasing the number of dental hygiene graduates in the future, it would be preferable to either cut back class sizes or have some educational programs have class intakes every two years instead of completely closing down some of the programs.

These additional concerns relating to human resources requirements in dental hygiene should cause those persons responsible for the education of dental hygienists to resist over-reacting to the increased number of dental hygienists. It is hoped that human resources planners will examine and evaluate not only the results and recommendations of dental human resources studies, but also the assumptions upon which the recommendations are based.

7. Conclusions

Two articles and one report by human resources investigators point out the difficulty in assessing dental human resources requirements. One article (Waldman and Pollack, 1980) found that "the presentation of actual and prospective numbers ... and ratios ... vary widely depending on the reporting agency ... and the purpose for which the report is intended". Another article (Born, 1981) states that "the stakes involve the collective health of the public, future dental incomes, untold tax dollars, the livelihood of several thousand dental educators ...". In addition, a specific report on assessing dental human resources points out that "human resources planning is a political enterprise - values and subjective impressions play an important role in most human resources studies" and goes on to say that "the real deficiency and consequent challenge is in the acquisition of the data by which to make these calculations not the techniques by which the analyses are done," (DeFriese and Barker, 1982).

Even though statistical records are being kept on numbers of dentists and dental hygienists, a desirable step would be to develop a more sophisticated and accurate method of keeping track of all dental human resources data necessary to make informed decisions. In a technical report (CDA, 1982b) a computerized simulation human resources model was presented which, along with its attendant data, could provide insight into possible outcomes from various changes being contemplated. What has been needed for some time is a specific model for forecasting human resources needs in dental hygiene, incorporating changing functions and practice settings for all dental health personnel.

Any human resources study on dental hygienists and/or dentists should not be conducted without consideration of such factors as the changing demand for care, increasing productivity of the dental team, changing public and professional attitudes, and the future role of all dental health personnel in the provision of dental services. In addition, it must be acknowledged that there are factors of an unknown category such as future research and technological developments which could have significant effects on the prevention and treatment of dental disease.

Readers are directed to the 1987 census survey of dental hygienists for more current information on dental hygienists in Canada.

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IV

EDUCATION

1. Introduction

The first dental hygiene education program in Canada was established in 1951 at the University of Toronto. This initiative was followed in 1956 by the development of a program in the Canadian Armed Forces in Ottawa. During the 1960s and 1970s five more dental hygiene education programs were established in faculties of dentistry at Canadian universities. Several programs were established in community colleges in Quebec, Ontario and Saskatchewan in the 1970s.

The following is a brief chronology of dental hygiene education in Canada:

1950 - Establishment of an accreditation committee on dental hygiene education - CDA Council on Education, Survey Policy Committee, by the Canadian Dental Association

1951 - Establishment of the first dental hygiene education program in Canada at the Faculty of Dentistry, University of Toronto

1953 - Graduation of the first six dental hygienists from the University of Toronto program

1956 - Commencement of an educational program for dental hygienists in the Canadian Armed Forces in Ottawa, Ontario

1958 - Transfer of the educational program for military dental hygienists to the Canadian Dental Services School at Base Borden, Ontario

1961 - Establishment of the School of Dental Hygiene, Dalhousie University

- Establishment of the Dental Auxiliary Program at the University of Alberta

1963 - Establishment of the School of Dental Hygiene, Faculty of Dentistry, University of Manitoba

- Graduation of the first classes in dental hygiene at the University of Alberta and Dalhousie University

- Commencement of the accreditation of dental hygiene education programs by the Council on Education, Canadian Dental Association

1965 - Graduation of the first dental hygiene class at the University of Manitoba

1968 - Establishment of the Program of Dental Hygiene, Faculty of Dentistry, University of British Columbia

1970 - Graduation of the first dental hygiene class at the University of British Columbia

1971 - Establishment of the baccalaureate degree program in dental hygiene at the Faculty of Dentistry, University of Montreal

1972 - Commencement of dental hygiene education programs at six Collèges d'Enseignement général et professionnel (CEGEPs) in Quebec

1973 - Commencement of the dental hygiene education program at CEGEP John Abbott

1974 - Establishment of the first dental hygiene education program in a community college in Ontario at Algonquin College, Ottawa

- Graduation of the first dental hygiene class, University of Montreal

1976 - Establishment of ten additional dental hygiene education programs in community colleges in Ontario

1977 - Establishment of the post-diploma degree program at the University of Toronto, granting a Bachelor of Science in Dentistry for Dental Hygienists - BScD (DH)

- Final year of graduation from the diploma program in dental hygiene education, University of Toronto

1979 - Initiation of the dental hygiene program at Wascana Institute, Regina, Saskatchewan as a post-diploma program for graduates in dental nursing (now called dental therapy)

1979 - First graduates of the BScD (DH) program University of Toronto

1979 - Establishment of the post-diploma degree program at the University of Montreal

1986 - Termination of the diploma program in dental hygiene education, University of British Columbia

- Establishment of the first dental hygiene education program in a community college in British Columbia at the Vancouver Community College
- Establishment of dental hygiene programs at CEGEPs in Hull and Chicoutimi, Quebec

1987 - Establishment of a dental hygiene education program at the College of New Caledonia in Prince George, B.C.

2. University Programs

Initially, dental hygiene education programs in Canada were two years in length. They were located within faculties of dentistry at the University of Toronto, established in 1951; Dalhousie University and the University of Alberta, 1961; the University of Manitoba, 1963; and the University of British Columbia, 1968. These programs except for Alberta were initially supported by grants from the W.K. Kellogg Foundation (Dimitri and Voris, 1978). Alberta received support from national health grants.

As early as 1968 there had been an expression of need for baccalaureate programs in dental hygiene to prepare dental hygiene and dental assisting educators, senior public health supervisors and consultants, and researchers. A statement to this effect was issued by Canadian dental hygiene educators at a meeting in October 1968 in London, Ontario and widely circulated to deans of dental faculties, officials of the Canadian Dental Association, dental specialty groups, provincial dental registrars, provincial dental public health directors, and national and provincial dental hygiene association presidents.

A similar recommendation was contained in the Report of the Federal Government Ad Hoc Committee on Dental Auxiliaries in 1970 (Ad Hoc Committee on Dental Auxiliaries, 1970).

The University of Montreal was the first Canadian educational institution to offer a degree program (BSc) for dental hygienists. The three-year baccalaureate program which graduated its first class in 1974, was designed to prepare educators for the proposed dental hygiene education programs in some Collèges d'enseignement général et professionnel. The basic dental hygiene degree program continued until 1979 when it was replaced by a certificate-degree program for dental hygiene graduates from the CEGEPs. The previous baccalaureate program at the University of Montreal required a CEGEP diploma in a general field with a health sciences concentration (Lussier, 1981). To date thirty-three dental hygienists have been graduated from this certificate program (Pepin, 1985). The need for dental hygienists to pursue studies beyond the diploma level has been expressed by the dental hygiene profession in Quebec. Concern has been expressed that the present certificate program be maintained and periodically revised to respond to manpower demands (Goudreault, 1985).

In 1977 the University of Toronto initiated a post-diploma program of studies of two years in length leading to the degree BScD(DH), and the same year it terminated its two-year diploma program. Diploma programs were by then established in ten Ontario community colleges (Dimitri and Voris, 1978).

The need for further baccalaureate programs in dental hygiene in western Canada was recently investigated by a researcher from the University of Manitoba (University of Manitoba, 1983). The results indicate a market demand which justifies the establishment of at least one baccalaureate program in dental hygiene at a university in western Canada. The study included the development of an instrument to assess the need for and desired skills of baccalaureate dental hygienists. This instrument should prove of value in estimating similar needs in the central and Atlantic regions of Canada.

Lewis found that as of 1979, 41 per cent of Canadian dental hygienists had obtained post-secondary education beyond their initial dental hygiene program. This indicates a high level of

interest in post-diploma education among Canadian dental hygienists.

3. Canadian Armed Forces Program

The Canadian military establishment began a program to prepare dental hygienists in the mid-1950's in Ottawa, Ontario. The School moved to CFB Borden, Ontario in 1958. This is a competency-based program which includes formal instruction interspersed with on-the-job training and several years experience before proceeding onward from dental assisting to dental hygiene and dental therapy (Mountain, 1982).

4. Community College Programs

One of the recommendations of the Wells Committee in 1970 was that dental hygiene education programs be instituted in community colleges (Ad Hoc Committee on Dental Auxiliaries, 1970).

Dental hygiene education programs were established in six francophone Collèges d'enseignement général et professionnel (CEGEPs) in Quebec in 1972 and one anglophone CEGEP in 1973. Two additional francophone programs were established in 1982 and another two in 1986. The dental hygiene education programs in these colleges encompass the three years of the CEGEP programs.

Collèges d'enseignement général et professionnel (CEGEPs)

Édouard-Montpetit	- Longueuil
François-Xavier Garneau	- Sillery
John Abbott	- Sainte-Anne-de-Bellevue
Maisonneuve	- Montréal
Saint-Hyacinthe*	- Saint-Hyacinthe
Saint-Jérôme**	- Saint-Jérôme
Trois-Rivières	- Trois-Rivières
L'Outaouais	- Hull
Chicoutimi	- Chicoutimi

* Formerly called Bourgchemin.
** Discontinued, May 1979.

In 1974, Algonquin College, located in Ottawa, Ontario began the first dental hygiene education program based in a College of Applied Arts and Technology in Canada. Initially, it was a three-year program with a health sciences core curriculum in first year, followed by two years of specific dental hygiene education (Chatwin, 1975). In 1977 the program was changed to one year of dental hygiene following a one-year prerequisite dental assisting course. In the previous year, 1976, nine additional Colleges of Applied Arts and Technology in Ontario established dental hygiene education programs, each requiring dental assisting as a prerequisite. One additional program was established in 1977.

Colleges of Applied Arts and Technology in Ontario (CAAT's)

Algonquin	- Ottawa
Cambrian	- Sudbury
Canadore	- North Bay
Confederation	- Thunder Bay
Durham	- Oshawa
Fanshawe	- London
George Brown	- Toronto
Georgian	- Barrie
Niagara	- Welland
Seneca	- Toronto
St. Clair	- Windsor

In 1979 the Wascana Institute of Applied Arts and Sciences in Regina, Saskatchewan began a dental hygiene education program for graduates of their two-year dental nursing program. Until 1986 this was the only dental hygiene education program located in a community college in western Canada. Graduates of the dental nursing program, now called dental therapy, may also complete the requirements for the diploma in dental hygiene at the University of Manitoba in one year because they are granted advanced standing in several courses. The Vancouver Community College established a two-year diploma program in dental hygiene education at the same time as the University of British Columbia closed its program in 1985. The College of New Caledonia in Prince George, B.C. entered its first dental hygiene students in September, 1987.

Table 4.1 is a listing of all the dental hygiene education programs in Canada in 1987 by institution and level, location and date of first graduating class.

5. Number of Programs

The number of dental hygiene education programs at the diploma level in Canada expanded from one program in 1960 to 23 in 1981. One program in the Quebec, CEGEP Saint-Jérôme, was discontinued in 1979. The University of British Columbia program was terminated in 1986. In 1987 the number of dental hygiene education programs at the diploma level increased to 26. As discussed in Chapter III of this report, there is some concern that there may be too many programs, at least in central Canada, to keep a reasonable balance between new graduates and employment opportunities.

6. Entrance Requirements for Dental Hygiene Education Programs

Admission requirements vary by province and with the type of institution in which a dental hygiene education program is located. Most schools of dental hygiene require high school graduation or the senior matriculation equivalent. The University of British Columbia had a one-year university prerequisite which still applies at the Vancouver Community College.

The BScD program at the University of Toronto requires graduation from a university-based dental hygiene program at the diploma level or graduation from a CAAT program plus one year of university studies. The present post-certificate program at the University of Montreal offers a study in three major areas (certificates) and requires graduation from a diploma program in dental hygiene. The previous baccalaureate degree program at the University of Montreal required a CEGEP diploma in a general health field (French, 1978).

Admission to the dental hygiene education programs in Ontario CAAT's requires completion of a formal program in dental assisting or its equivalent. Certification as a dental assistant in Ontario has been deemed equivalent. Quebec CEGEP programs admit students to dental hygiene upon completion of high school education.

7. Education and Career Mobility for Allied Dental Personnel

Concerns have been expressed frequently about the lack of vertical and horizontal career mobility for allied dental personnel. These concerns were well articulated at the 1974 Conference on Dental Auxiliaries, sponsored by the Canadian Dental Association (Canadian Dental Association, 1974). Two educational approaches to increase career mobility have been described as the career ladder and career options (COP) concepts.

Career Ladder

The career ladder concept entails a vertical training relationship between dental assisting and dental hygiene. In this system students are first trained as dental assistants and then receive additional educational preparation to become dental hygienists. The Canadian military establishment has the oldest career ladder structure in Canada with progression from dental assistant to dental hygienist and dental therapist (Mountain, 1982).

In 1983 the University of Alberta proposed the Dental Hygiene/Dental Assisting Program Integration concept. This concept is based on equivalencies for the present dental hygiene courses, some of which could be achieved through computer-assisted instruction for dental assisting students from the Northern Alberta Institute of Technology and the Southern Alberta Institute of Technology who would then be eligible to complete their dental hygiene program at the University of Alberta. This concept is subject-oriented rather than year-oriented in that there is no provision for giving a year of credit. Individual credit may be given for some courses completed in dental assisting (Zier, 1983).

Table 4.1
Dental Hygiene Education Programs in Canada - 1988

Program Institution and Level	Location	Date of First Graduating Class
UNIVERSITY - BACCALAUREATE LEVEL		
University of Montreal[1]	Montreal, Que.	1974
University of Toronto	Toronto, Ont.	1979
UNIVERSITY - DIPLOMA LEVEL		
Dalhousie University[2]	Halifax, N.S.	1963
University of Toronto[3]	Toronto, Ont.	1953
University of Manitoba[2]	Winnipeg, Man.	1965
University of Alberta	Edmonton, Alta.	1963
University of British Columbia[9]	Vancouver, B.C.	1970
CEGEP's - DIPLOMA LEVEL		
Édouard-Montpetit	Longueuil, Qué.	1975
François-Xavier-Garneau	Sillery, Qué.	1975
John Abbott	Sainte-Anne-de-Bellevue, Qué.	1976
Maisonneuve	Montréal, Qué.	1975
Saint-Hyacinthe[4]	Saint-Hyacinthe, Qué.	1975
Saint-Jérôme[5]	Saint-Jérôme, Qué.	1975
Trois-Rivières	Trois-Rivières, Qué.	1975
L'Outaouais	Hull, Québec	1989
Chicoutimi	Chicoutimi, Québec	1989
CAAT's - DIPLOMA LEVEL		
Algonquin[6]	Ottawa, Ont.	1976
Cambrian	Sudbury, Ont	1978
Canadore	North Bay, Ont	1977
Confederation[7]	Thunder Bay, Ont.	1977
Durham	Oshawa, Ont.	1977
Fanshawe	London, Ont.	1977
George Brown[2]	Toronto, Ont.	1977
Georgian	Barrie, Ont.	1977
Niagara	Welland, Ont.	1977
Seneca	Toronto, Ont.	1977
St. Clair	Windsor, Ont.	1977
OTHER - DIPLOMA LEVEL		
Canadian Forces Dental Services School[2]	Borden, Ont.	1957
Wascana Institute of Applied Arts and Sciences[8]	Regina, Sask.	1980
Vancouver Community College[10]	Vancouver, B.C.	1987
College of New Caledonia	Prince George, B.C.	1989

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1 As of 1979, post-certificate, BSc degree program.
2 Programs offer expanded-duty (restorative) training.
3 Since 1977 diploma program has been phased out and replaced by a two-year, BScD(DH) program.
4 Formerly called Bourgchemin.
5 Program discontinued May 1979.
6 Algonquin College offers dental hygiene programs in both English and French.
7 Confederation College offers a dental hygiene education program in alternate years.
8 Program available to licensed dental therapists only.
9 Program discontinued, May, 1986.
10 The 1987 graduates took first year at UBC and the second year at VCC.

The career ladder concept was adopted in the development of the dental hygiene education programs in the Ontario community colleges. Originally, graduation from an approved dental assisting program or successful completion of a challenge examination was a prerequisite to training as a preventive dental assistant. This status was in turn, prerequisite to entry into a scaling module of four months. Consequently, in 1976, there existed two levels of preventive dental assisting programs. The second level included the traditional dental hygiene skills. Changes in the regulations in early 1977, however, permitted the level two students to graduate as dental hygienists. During the first year, some colleges offered both programs, while others offered integrated programs graduating only dental hygienists. Of these latter colleges, some offered separate preventive dental assisting programs as well (Strevens, 1983; Ono, 1982).

The educational programs for the preventive dental assistant in Ontario ceased at the beginning of 1979. The ladder concept in Ontario then included the uncertified dental assistant, the certified dental assistant, the dental hygienist and the expanded-duty dental hygienist. A further change occurring in 1978 in the admission process for community colleges has caused some problems because, at the present time, any certified dental assistant is eligible to apply for admission to dental hygiene. Originally, graduates of the dental assisting programs were the only ones considered for admission to dental hygiene. The problem is compounded by the fact that dental hygiene enrolment is limited to a greater degree than the dental assisting counterpart. Competition is keen for entry into dental hygiene, causing the dental assisting students to be very competitive with one another. Over the years, most colleges have adopted the traditional requirement of a minimum of one-year practice experience as a dental assistant prior to admission into the dental hygiene program. The method of selection of candidates has been variable, however, and most colleges include some type of testing (i.e. dental assisting knowledge test and/or dexterity test) as a means of screening candidates. A few colleges use random selection after screening for minimum qualifications. (Ono, 1983).

In 1983 a motion requesting a return to the traditional two-year dental hygiene program was forwarded by the Royal College of Dental Surgeons of Ontario to the Ministry of Colleges and Universities for consideration by the Provincial Consultative Committee. The motion was as follows:

"The RCDS stipulates that in order to sit the licensing examination in 1985, a dental hygienist must have successfully completed an accredited dental hygiene program of not less than two years," (Strevens, 1983).

The recent Task Force on Dental Hygiene established by the Ontario Ministry of Colleges and Universities (1984), addressed the issues of accreditation of dental hygiene programs and the "career ladder" concept of dental auxiliary education. The committee included representatives from the Royal College of Dental Surgeons of Ontario, the Ontario Dental Association, the Ontario Dental Hygienists' Association, the Committee of Presidents of the Ontario Community Colleges, the Ministry of Health and the Council of Regents of the Ministry of Colleges and Universities. Following their review of the ladder concept adopted in Ontario, they "agreed that the ladder approach be maintained at this time". Their recommendations concerning accreditation are reported in the following section on Accreditation.

Career Options

A career options system was first proposed in British Columbia in the mid-1970s and included four levels of dental auxiliary education with both vertical and lateral mobility. It differed from the Ontario system in that dental assisting was not a prerequisite for dental hygiene education.

The career options system received general province-wide support in British Columbia. This system specifies core education for each level, as well as modules for expanded functions. The career options (COP) system is considered

significant in providing a constructive step toward more effective delivery of dental services in British Columbia by providing a means of resolving problems relating to dental auxiliary education, licensure and practice (Conklin and Voris, 1975). Parts of the COP system such as local anesthesia, orthodontics and the public health module have been implemented.

In general, it seems that the career options system does not completely meet the needs of dental hygienists desiring career mobility in such areas as dental hygiene and dental assisting education, community health, administration, and research (MacDonald and Miller, 1981).

A further approach to vertical mobility for dental assistants is to give experienced dental assistants - and other health professionals such as nurses - preferred status for admission to dental hygiene programs and permit them to take challenge examinations in certain courses, the successful completion of which would exempt them from having to take those courses. This system is currently in operation at the University of Manitoba. Lateral mobility between dental therapy and dental hygiene is now possible through programs at either Wascana Institute in Regina or the University of Manitoba.

8. Accreditation

Accreditation of dental hygiene education programs was initiated in the United States in 1952, and now includes over two hundred programs in that country (ADA, 1982). Accreditation of dental education programs in Canada is the responsibility of the Canadian Dental Association through its Council on Education which prepared the first accreditation report on a dental hygiene education program in 1963. Accreditation is not mandatory, but rather sought on a voluntary basis by the institutions offering dental hygiene education. Programs are surveyed by site-visit teams every five years, or more frequently if so recommended by the Council (Yeo, 1982). At the time of writing most of the dental hygiene programs in Canada were accredited or had requested site visits from the Council on Education and Accreditation of the Canadian Dental Association. (Canadian Dental Association, 1986).

Guidelines for minimum standards in dental hygiene have been formulated by the Canadian Dental Association with input from the Canadian Dental Hygienists' Association. The guidelines closely resemble those required for accredited American dental hygiene education programs. The Canadian Dental Association and the American Dental Association grant reciprocal recognition to graduates of accredited dental hygiene education programs. One anomaly in the accreditation process has been the absence of criteria for and evaluation of non-traditional (i.e. expanded function) portions of curricula. However, the guidelines have been revised to accommodate these areas and were approved by the Canadian Dental Association in 1984 (CDA, 1984).

9. Education for Expanded Functions

In the 1960s there were many advocates for extending the clinical functions of dental hygienists beyond those traditionally related to prevention (Lobene, 1969; Romcke, 1972; Forgay, 1980). The Canadian Armed Forces initiated a training program in 1962 which enabled Armed Forces dental hygienists to perform functions in the area of restorative dentistry, such as placing, contouring and finishing all plastic restorations in teeth that had been prepared by a dentist (Baird, 1967).

In 1969 Dalhousie University provided a special two-and-one-half month training program in similar restorative procedures for three Prince Edward Island dental hygienists. This was the beginning of a study to determine whether expanded restorative functions could be taught to dental hygienists in a short period of time. Subsequently in 1971-72, expanded functions in restorative dentistry were incorporated into the two-year curriculum at Dalhousie University. Shortly afterwards they became part of the University of Manitoba curriculum, and a post-certificate module in Ontario. For several years the University of British Columbia included restorative functions as an option for

dental hygiene students, although these duties are not legally recognized for dental hygienists in British Columbia and consequently this training has now been discontinued.

Ontario studies relating to the feasibility of utilizing dental hygienists with expanded functions were conducted by faculty members from the University of Toronto in 1974-75 (Ellis, Hord, Thompson, 1975). In Quebec, expanded restorative functions have been included in the curricula since the creation of the BSc degree and CEGEP programs. These functions, however, have only been recognized legally in the province since 1982 by order of the Government of Quebec. This order, however, has been successfully contested by the Order of Dentists and declared unconstitutional because it was not adopted in English (Goudreault, 1985).

The University of British Columbia commenced teaching the administration of local anesthesia to dental hygiene students in 1978. Presently, dental hygienists applying for registration in British Columbia must have completed an educational program in local anesthesia. For dental hygienists whose program did not include this educational preparation a continuing education course for qualification to perform local anesthesia must be completed within a required period after entering the province. It is available through the University of British Columbia. Also, the University of Saskatchewan College of Dentistry has also offered local anesthesia as a continuing education course. A continuing education program in minor periodontal surgery has been given in Saskatchewan for graduate dental hygienists. Expanded function education in orthodontics is available through continuing education programs in Ontario, British Columbia, Manitoba, and Nova Scotia.

10. Continuing Education

The necessity to continue learning throughout one's professional life in order to assure continuing competence and prevent obsolescence has long been recognized by dental hygienists as well as by other health professionals. Participation in continuing education activities is encouraged by the Canadian Dental Hygienists' Association as well as provincial dental hygiene associations. Courses are offered through continuing education departments in faculties of dentistry, schools of dental hygiene, provincial and local dental and dental hygiene associations, provincial licensing bodies and provincial governments.

Participation rates in continuing education courses by Canadian dental hygienists are fairly high. Lewis (1982) reported that 80 per cent of practicing dental hygienists had taken continuing education courses since graduation, with 3.8 being the average number of courses taken in the previous two years.

There is a growing need for refresher or re-entry courses for hygienists who have been out of the work force for a time and who wish to return to practice, as well as for those who feel that their knowledge and skills need to be updated. This updating is current practice in the Armed Forces at five-year intervals for individuals. Re-entry programs have been offered at the University of Manitoba, Dalhousie University and the University of British Columbia to satisfy the demand of dental hygienists and provincial licensing boards.

The Canadian Dental Hygienists' Association has completed a study of the continuing education needs of dental hygienists living in areas of Canada classified as remote from the usual continuing education centres for dental hygiene. The survey identifies special needs for these dental hygienists in private practice and community health (Wener, 1983).

British Columbia and Saskatchewan have mandatory continuing education requirements to enable dental hygienists to continue licensure. At present, there does not seem to be any momentum to initiate mandatory continuing education in other jurisdictions. A survey of Canadian dental hygienists (Forgay, 1980) indicated they were somewhat in favour of mandatory continuing education, and felt it would increase the status of dental hygiene.

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V

REGULATION

1. Introduction

The jurisdiction over most matters pertaining to health in Canada is vested in provincial and territorial governments. Provincial legislatures and their counterparts in the territories determine the mechanism by which members of specific health disciplines are regulated. Usually the legislature delegates power to a board or college to provide this regulation by means of an act, regulations and bylaws. The governing body is given the authority to register, license, determine the scope of practice, establish regulations and discipline members of the profession.

The primary purpose of regulating the practice of a given health discipline is to protect the public interest (Forbes, 1983; Economic Council, 1981; Scheffman and Applebaum, 1982). Regulation is meant to ensure that standards of quality and safety are met. The regulation mechanism is designed to protect the general public in matters for which they may lack adequate information to make informed choices. Regulation is considered essential for direct health service providers.

Regulation frequently takes the form of licensure or certification to attest to the qualifications or competency of a specific service provider or type of provider. Control over providers by licensing or certification is a means of controlling some determinants of the quality of care, such as the education and experience of the provider (Scheffman and Applebaum, 1982). Thus, the public interest is served by preventing untrained persons from entering the occupation (Rozovsky, 1976).

Regulation should serve occupational needs only in so far as they correspond to the criteria of public interest. Regulation is not considered to be in the public interest when it directly serves the interests of the occupational group. Over-regulation by restricting the method of practice of a member of an occupation may limit competition and restrict the modes and scope of practice. In the field of dental health, while certain desirable objectives of regulation of dental service markets have been realized, there have also been some less desirable effects. For example, professional regulation protects the consumer who may lack the information necessary to determine both personal need and provider competency in an unregulated market which has no service-provider restrictions. However, these same professional or occupational regulations restrict the competitiveness of the market by limiting entry into or alternatives to existing sources and organizational configurations of services, and by restricting advertising and otherwise influencing behaviour of the provider group, either directly or indirectly through professionalization and peer pressure. A basic problem exists: there are two major interests of any occupational group - the private interest of the members of the occupation, and the public interest. The two interests are not always compatible (Rosovsky, 1976). Dental services are provided in an essentially private market and as such are particularly susceptible to anti-competition aspects of self-regulation.

Deregulation of the health field has been seen increasingly as a policy issue since the 1970s. Self-regulation by professionals has been a major focus of inquiry. Examples include the Economic Council of Canada study, Reforming Regulation, 1981, the McRuer Royal Commission on Civil Rights, (1968), The Ontario Committee on the Healing Arts, (1970), and the current review of health professions in Ontario, the Castonguay/Nepveu Report on the professions and society with the subsequent Professional Code enacted in 1973 in Quebec, and the Foulkes Report in British Columbia (1974).

Regulation arises as a major issue in the practice of dental hygiene and the development of innovative primary care policies and programs for preventive dental services. Health professions are usually self-regulating, the board or college being composed primarily of members from the specific health discipline. The regulation of dentistry in Canada fits this

pattern. Dental hygiene, with the exception of Quebec and most recently announced for Ontario, does not. Instead, dental hygiene is usually regulated under dental acts.

2. Registration and Licensure

The means of regulating eligibility for dental hygiene practice in Canada are registration and licensure. The terms registration and licensure, although sometimes used interchangeably, are not synonymous. Registration refers to the enrollment on a roster of an individual deemed eligible to practise. Those thus enrolled are eligible to become licensed, usually through the payment of an annual fee. In most provinces a dental hygienist must be licensed and therefore also registered to engage in dental hygiene practice. It is possible to remain registered in a province without holding a licence current for that year. With a few exceptions the principle of once registered always registered holds true. Table 5.1 and 5.2 summarize features of registration and/or licensure of dental hygienists by province and territory.

3. Composition of Regulating Bodies

When dental hygiene was first introduced into Canada, few allied health professions were self-regulating. Dental hygiene itself was only just becoming well established throughout its country of origin, the United States, and was beginning to spread to other countries. Well-defined standards of education and licensure were not developed. In addition, for many years the paucity of dental hygienists in most provinces made self-regulation impractical. The initial regulation of dental hygiene under dental practice acts was, therefore, a reasonable and natural mechanism, and under this approach dental hygiene became established in most provinces.

With the exception of the province of Quebec, regulation of dental hygiene practice by boards which are the regulatory agents for dentists still persists. Since 1975, the governing body for dental hygiene in Quebec has been the Corporation professionnelle des hygiènistes dentaires du Québec (Professional Corporation of Dental Hygienists of Quebec), (Fréchette, 1981) presently composed of thirteen dental hygienists and three lay persons. Quebec is the only province in which dental hygienists are in the majority on their regulatory body. Dental hygiene in Quebec is recognized as being a full profession.

On March 12, 1987 the Ontario Minister of Health announced that dental hygiene would be governed separately from dentistry. The process of defining the new self-regulating body is currently underway. (Ontario Ministry of Health, 1987)

Where dental hygiene is regulated through dental boards, the membership of these boards is in some cases limited to dentists. Seven provincial dental boards have a dental hygienist member, one alternates representation between dental hygienists and dental assistants, and a ninth accords non-voting observer status to two dental hygienists. The remaining three provinces and territories have no dental hygienists included on the boards which govern dental hygiene. Table 5.3 describes the composition of regulatory bodies for dental hygiene practice in Canada.

4. Supervision

The requirement for supervision of dental hygienists originated historically to protect patients and employing dentists against "...errors and excesses of assistants and helpers who were unlicensed, untrained and uneducated," (Hillenbrand, 1981).

Requirements for supervision exist in all provinces and territories, but there is no uniform meaning or interpretation of the term supervision. Provincial and territorial regulations regarding supervision of dental hygienists are presented in Table 5.4. As this table indicates, there is no clear definition of supervision in some of the provinces and territories. Difficulty in interpreting readings and discussions that deal with levels of supervision is evident and there is confusion over how some terms are defined and are used.

Table 5.1

Authorities for Licensure and/or Registration of Dental Hygienists, by Province or Territory, 1987[1]

Province/Territory	Enabling Act	Licensing Body	Composition of Licensing Body
NEWFOUNDLAND	Newfoundland Dental Act 1983	Newfoundland Dental Board	Five dentists elected by Nfld. Dental Association; three appointees from Nfld. Dept. of Health; two auxiliaries[2]; one lay person. All are voting members.
PRINCE EDWARD ISLAND	Dental Professional Act	Dental Council of PEI, a council of the PEI Dental Association	Council members who are the Executive of the PEI Dental Association. All are voting members.
NOVA SCOTIA	Dental Act of Nova Scotia	Provincial Dental Board of Nova Scotia	Eight dentists; four government appointees, three elected by NSDA, one registrar; one dental hygienist. All are voting members. Non-voting (observers): One faculty of dentistry representative; One dental assistant
NEW BRUNSWICK	New Brunswick Dental Act 1985	Board of Directors of New Brunswick Dental Society	Twelve dentists; One dental hygienist; One dental assistant; One lay person. All are voting members.
QUÉBEC	Professional Code (1973, ch. 43) Section 37K)	Board of La Corporation professionnelle des hygiénistes dentaires au Québec (Professional Corporation of Dental Hygienists of Quebec)	Thirteen dental hygienists elected by members of the Corporation professionnelle des hygiénistes dentaires du Québec (Professional Corporation of Dental Hygienists of Québec) and three lay persons appointed by the Office des professions du Québec (Office of Professions of Québec) for the purpose of representing the public. All are voting members.

1 Verified by responding provincial/territorial registrars, February/March 1987.

2 Newfoundland - Auxiliaries are defined as dental hygienists and dental technicians. There could be one of each on the Board or two of either. At present, there are one of each.

Table 5.1 (cont'd)

Province/Territory	Enabling Act	Licensing Body	Composition of Licensing Body
ONTARIO	1. Ontario Regulation 447, section 50 of the Health Disciplines Act (1974), Part II: Dentistry 2. Healing Arts Radiation Protection Act (1985), an Act to Provide for the Safe Use of X-ray Machines in the Healing Arts.	The Royal College of Dental Surgeons of Ontario	Nine geographically-elected dentists; Two faculties of dentistry representatives; Three to five lay persons appointed by the Lieutenant-Governor-in-Council. Non-Voting (observers): Two dental hygienists[3]
MANITOBA	Manitoba Dental Association Act (1971) states that dentists may delegate to graduates of MDA-approved courses. (Private Sector Dental Hygienists) Dental Health Workers Act. (1976) (Community Health Dental Hygienist)	Manitoba Dental Association Board licenses under 1957 by law from previous MDA Act Dental Health Workers Board.	Seven dentists; One auxiliary - either a member of MDHA or MDNAA. One lay representative; One dental health worker; One dentist; One person not a member of any health profession; Two appointees of Minister of Health; One Executive Director of Dental Health Services. All are voting members.
SASKATCHEWAN	Dental Professions Act (1978)	College of Dental Surgeons of Saskatchewan	Seven members of the College of Dental Surgeons of Saskatchewan; Dean of the College of Dentistry, University of Saskatchewan; One member-Representative, Dental Hygiene; One member-Representative, Certified Dental Assistants; One member - Representative, Board of Governors, Canadian Dental Association; Two Consumer Representatives. All are voting members.
ALBERTA	The Dental Profession Act Sections 14 and 15 and Dental Profession Regulation Section 51	No licensing body established at the time of writing - to be established by a new body, The Dental Occupations Council. Non-Alberta graduates must be certified by the Universities' Co-ordinating Council at the University of Alberta.	Composition of licensing body under discussion. Current intent is for registration and licensing by the Board of the Alberta Dental Hygienists' Association.

[3] Ontario dental hygienists were granted self-regulation March 12, 1987, with implementation yet to be completed.

Table 5.1 (cont'd)

Province/Territory	Enabling Act	Licensing Body	Composition of Licensing Body
BRITISH COLUMBIA	Dentist's Act (Chapter 32)	College of Dental Surgeons of British Columbia	Four table officers of the College; Eleven elected representatives from dental component societies and four members-at-large; One representative each from interspecialty dental society; Faculty of Dentistry; British Columbia Dental Hygienists' Association; Certified Dental Assistants' Society; One lay person appointed by Lt.-Governor-in-Council. All are voting members.
NORTHWEST TERRITORIES	An ordinance to amend the Dental Profession Ordinance. (Dental Hygienists)	The Commissioner of the Northwest Territories	The Commissioner and The Council of the Northwest Territories.
YUKON TERRITORY	An ordinance to amend the Dental Profession Ordinance, Chapter One. Dental Hygienists and Dental Therapists	Dept. of Consumer and Corporate Affairs Executive Council Members	Commissioner in Executive Council; Executive Council Member

Table 5.2

Eligibility for Licensure and/or Registration of Dental Hygienists, by Province or Territory, 1987[1]

Province/Territory	Eligibility for licensure:	Graduates of CDA Accredited Programs	Graduates of Programs Not Accredited by CDA	Graduates of Foreign Programs
NEWFOUNDLAND	Must be a graduate of a CDA-approved school.	No examination required.	No provision	Some United Kingdom dental hygienists have been licensed after their credentials were assessed by some Nfld dental hygienists.
PRINCE EDWARD ISLAND	Candidate must be female, at least 18 years of age; satisfy the Board that she is of good moral character; furnish evidence of two academic years of dental hygiene of school approved by the Council; pass any examination which may be given by the Council; and apply for licensure and registration.	No examination required.	No provision as such, but a candidate could be considered after furnishing evidence of two years of dental hygiene in a school approved by the Council.	No provision.
NOVA SCOTIA	Any person who: a) satisfies the Board that he/she is a person of good moral character b) furnishes evidence satisfactory to the Board that he/she has pursued and successfully completed a course of study in an accredited school for dental hygiene approved by the Board. c) passes such examination, if any as may be prescribed by the board d) makes application to the Board e) pays a registration fee as determined by the Board a Certificate of Licensure to practice dental hygiene.	No examination required.	Candidates who have successfully completed the Ontario Board Examinations will be considered for licensure.	Same as for graduates of non-accredited schools.

[1] Verified by responding Provincial/Territorial Registrars, February/March, 1987 and December, 1987.

Table 5.2 (cont'd)

Province/Territory	Eligibility for licensure:	Graduates of CDA-Accredited Programs	Graduates of Programs Not Accredited by CDA	Graduates of Foreign Programs
NEW BRUNSWICK	Candidates who have graduated from a CDA-accredited school.	No examination required.	No provision.	No provision.
QUEBEC	A graduate from an accredited or non-accredited school outside Quebec must first apply to the Equivalency of Diploma and Training Committee for diploma(s) evaluation. Minimal requirements (credits) must be met. Following the review, the Committee makes one of the following recommendations to the Bureau (Board of Directors): diploma equivalence or training equivalence. If the situation does not allow for either of the recommendations to be made, the Bureau may impose an examination or a training period to complete the requirements. After equivalence is established, the candidate is subject to the same basic eligibility criteria. One year temporary licences are issued only to candidates from outside Quebec until they have proof of a working knowledge of the French language.	- Accreditation is not a criterion for licensure in Quebec. - No examination is required for Quebec graduates of accredited programs.	- Accreditation is not a criterion for licensure in Quebec. - No examination is required for Quebec graduates of non-accredited programs.	Accreditation is not a criterion for licensure in Quebec.
ONTARIO	Dental Hygienists (section 50(ii)) and dental hygienists who have been approved in writing by the College to perform additional specified acts in the practice of Dentistry (Section 50(2)). All graduates of dental hygiene programs approved by RCDS. All are required to successfully complete the provincial licensing requirements. This may include a clinical examination. Graduates of accredited programs in the Ontario Colleges of Applied Arts and Technology are exempt from the written part of the examination. Out-of-province candidates are eligible for examination if graduates of approved schools.	Clinical examination may be required.	Written and clinical examinations required.	Individual consideration with respect to licensing examination.

Table 5.2 (cont'd)

Province/Territory	Eligibility for licensure:	Graduates of CDA-Accredited Programs	Graduates of Programs Not Accredited by CDA	Graduates of Foreign Programs
MANITOBA	Private sector dental hygienist Graduation from CDA-accredited program. Community health dental hygienist Determined by Dental Health Workers Board on recommendation of their Accredited Committee.	Eligible to practice if graduation from accredited program	As approved by MDA Board or by examination.	Determined on an individual basis.
SASKATCHEWAN	A graduate from an accredited Canadian school or program of dental hygiene or a graduate of an accredited school or program in dental hygiene in the U.S.A.	From accredited schools or graduates from schools approved by the College of Dental Surgeons.	As approved by the College of Dental Surgeons Board.	U.S. accredited programs.
ALBERTA	Graduates in dental hygiene of the Faculty of Dentistry of the University of Alberta; Graduates of other dental hygiene programs upon certification by the Universities Co-ordinating Council.	Certification granted within five years of graduation with evidence of active practice for the past five years.	Certification by examination.	Certification by examination.

Table 5.2 (cont'd)

Province/Territory	Eligibility for licensure:	Graduates of CDA-Accredited Programs	Graduates of Programs Not Accredited by CDA	Graduates of Foreign Programs
BRITISH COLUMBIA	(Registered Dental Auxiliary III) Successful completion of the course of study for the category of the auxiliary body concerned. Graduate from a school of the auxiliary body concerned or other institution recognized by the Council as providing a course of study equivalent to that defined and who is of good character and has passed such examinations and paid such examination fees as may be prescribed by the Council.	Graduates who apply for registration within five years of graduation and have successfully completed all examinations required as a condition of licensing in the province or state which they completed their dental hygiene educational program are accepted for registration without examination. Examinations are required for candidates who have graduated more than five years ago. No written examinations are required for candidates who apply for registration within five years of successfully completing the American Dental Association National Board Dental Hygiene Examination.	Candidate will be required to sit the provincial dental hygiene board examination.	Protocol has been established where a review is made on an individual basis to determine eligibility to sit the provincial Dental Hygiene Board Examinations.
NORTHWEST TERRITORIES	1. a graduate of a college, school or university in a program of dental hygiene accredited by the Canadian Dental Association. 2. registered as a dental hygienist in a province, state or the Yukon Territory.	No examination required	No provision	No provision
YUKON TERRITORY	Graduates of schools recognized by the Executive Council member and approved by the Commissioner in Executive Council.	No examination required	No examination required if approved by licensing authority	No examination required if approved by licensing authority.

Table 5.3
Composition of Licensing and/or Registration Authorities
for Dental Hygienists, by Province and Territory, 1987

Province/Territory	Dentists	Dental Hygienists		Lay Persons	Other
		Voting	Non-voting		
Newfoundland	5	1 or 2	-	1	May have 1 or 2 dental technicians (voting)
Prince Edward Island	Executive of PEI Dental Association	-	-	-	-
Nova Scotia	8	1	-	-	1 member of the Faculty of Dentistry observer 1 dental assistant observer
New Brunswick	12	1	-	1	1 dental assistant.
Quebec	-	13	-	3	-
Ontario	11	-	2	5	-
Manitoba	7	1(1)	-	1	-
Saskatchewan	7	1	-	2 consumer representatives	1 certified dental assistant 1 representative of CDA Board of Governors Dean of Dentistry, College of Dentistry
Alberta(2)	2(4) -(5)	2(4) all(5)	-(4) -(5)	-(4) 1(5)	2 certified dental assistants (4) -(5)

(1) Alternates with dental assistants, term used is one dental auxiliary
(2) Alberta has a new body (1984), The Dental Occupations Council, which will establish the licensing body, the Alberta Dental Hygienists' Association, which will have one voting member on the Alberta Dental Association Board
(3) Includes elected representatives from the Interspecialty Dental Society and the Faculty of Dentistry
(4) Dental Occupations Council
(5) Alberta Dental Hygienists' Association Board

Table 5.3 (cont'd)

Province/Territory	Dentists	Dental Hygienists		Lay Persons	Other
		Voting	Non-voting		
British Columbia	21(3)	1 BCDHA Representative	-	1	1 Representative Certified Dental Assistants Society
Northwest Territories					Commissioner and the Council of the Northwest Territories.
Yukon					Commissioner in Executive Council; Executive Council Member

(1) Alternates with dental assistants, term used is own dental auxiliary
(2) Alberta has a new body (1984), The Dental Occupations Council, which will establish the licensing body, the Alberta Dental Hygienists' Association, which will have one voting member on the Alberta Dental Association Board
(3) Includes elected representatives from the Interspecialty Dental Society and the Faculty of Dentistry
(4) Dental Occupations Council
(5) Alberta Dental Hygienists' Association Board

Table 5.4

Requirements for Supervision of Dental Hygienists, by Province and Territory, 1987

Province/Territory and Licensing Body	Type of Supervision/Setting	Description/Setting
Newfoundland		
Newfoundland Dental Board 211 LeMarchant Road St. John's, Newfoundland A1C 2H5	Direct supervision - private practice	Direct supervision means that the dentist must be in the building.
	Indirect supervision - public health	No definition available
Prince Edward Island		
Dental Association of PEI P.O. Box 1948 Charlottetown, PEI C1A 7N5	Direct supervision - private practice	No definition available
	General supervision - community health	No definition available
Nova Scotia		
Provincial Dental Board of Nova Scotia 604-5991 Spring Garden Road Halifax, NS B3H 1Y6	Direct supervision - private practice	Dentist must be present in the same office suite. If the employing dentist is absent, written agreement must be secured between another dentist in the same building and the dental hygienist.
	General supervision - public health	
New Brunswick		
New Brunswick Dental Society 93 Prince William Saint John, New Brunswick E2L 2B2	Direct supervision - private practice and institutions	No definition available
	Indirect supervision - public health	Under the responsibility of a dentist or director of dental services.
Québec		
Corporation professionnelle des Hygiénistes dentaires du Québec 5757 avenue Decelles, suite 237 Montréal (Québec) H3S 2C3	Direct supervision - private practice	Under a dentist's supervision, except for detection of dental oral diseases and teaching of the principles of oral hygiene.
	General supervision - public health	

Table 5.4 (cont'd)

Province/Territory and Licensing Body	Type of Supervision/Setting	Description/Setting
Ontario		
The Royal College of Dental Surgeons of Ontario 230 St. George Street Toronto, Ontario M5R 2N5	Direct supervision - private practice	A dentist shall be present in the office suite where the service is being rendered by the hygienist and the patients are aware that their treatment is being supervised by the dentist, and, further the dentist sees the patient in order to confirm the preliminary findings and make the appropriate diagnosis and treatment plan, and monitor the treatment being rendered.
	General supervision - public health	Arm's length supervision. The supervising dentist is not required to be present in the same office suite for dental hygienists performing public health activities.
Manitoba		
Manitoba Dental Association 300-296 Kennedy Street Winnipeg, Manitoba R3B 2M6	Direct supervision - private practice	Private sector dental hygienist: effective supervision and control; dentist must be present on premises.
	General supervision - community health	Dentist need not be present
Saskatchewan		
College of Dental Surgeons of Saskatchewan 109-514 23rd Street East Saskatoon, Saskatchewan S7K 0J8	Direct supervision - private practice	Effective supervision - shall be interpreted, to include pre- and post-examination of procedures detailed by a dentist, and shall include the dentist's physical presence on the premises whilst any detailed procedures are being performed.
	General supervision - community health	No definition available
Alberta		
To be revised by the newly-appointed body The Dental Occupations Council c/o Alberta Dental Association Suite 101, 8230 - 105th Street Edmonton, Alberta T6E 5H9	Nature of practice described by the University of Alberta curriculum 1981-82 and 1982-83.	No definition available
	General supervision - community health	No definition available

Table 5.4 (cont'd)

Province/Territory and Licensing Body	Type of Supervision/Setting	Description/Setting
British Columbia College of Dental Surgeons of British Columbia 1125 West 8th Avenue Vancouver, B.C. V6H 3N4	Direction Personal supervision	Direction, meaning that a licensed dentist shall issue necessary instructions to conduct authorized duties or procedures, but need not be present when carried out. Personal supervision meaning that a licensed dentist must be in the dental office, currently applied only to local anesthetic procedures.
Northwest Territories Northwest Territories Registrar Professional Licensing, Dept. of Public Service Government of the Northwest Territories Yellowknife, NWT X1A 2L9	Must practise under the supervision of a dentist.	No definition available
Yukon Department of Justice, Consumer, Corporate and Labour Affairs Branch Government of Yukon, Box 2703 Whitehorse, Yukon Y1A 2C6	May perform services under the direction of a dentist.	May perform dental service pursuant to the direction of a dentist but not necessarily under the immediate supervision of the dentist.

The Canadian Dental Hygienists' Association has adopted the following definitions:

> Direct Supervision: A dentist diagnoses and prescribes treatment for a patient and delegates procedures to the dental hygienist. A dentist is physically available while the dental hygienist delivers treatment.
>
> Indirect Supervision: A dentist diagnoses and prescribes treatment for a patient and delegates procedures to the dental hygienist. A dentist need not be physically present while the dental hygienist delivers treatment.
>
> General Supervision: A dentist is cognizant of dental hygiene procedures being performed but has not necessarily made a diagnosis.

These definitions have been agreed upon by the Canadian Dental Hygienists' Association (CDHA, 1984).

In the United States, the American Dental Hygienists' Association (1982) has used the following definitions:

> Direct Supervision - the dentist is present in the dental office, authorizes the procedures, remains in the dental office while the procedures are being performed by the dental hygienist and before dismissal of the patient, evaluates the performance of the dental hygienist.
>
> Indirect (Personal) Supervision - the dentist is present in the dental office, authorizes the procedures and remains in the dental office or building while the procedures are being performed by the dental hygienist.
>
> General (Direction) Supervision - the dentist has authorized the procedures and they are being carried out in accordance with his/her diagnosis and treatment plan.

All the above definitions agree that general supervision requires that the supervising dentist be aware of the work being done but does not require a dentist to be at the dental hygiene work site. Direct supervision requires a dentist to be at the dental hygiene work site. In this report all references to general and direct supervision carry these implications.

At present, in most jurisdictions, supervision requirements vary depending on whether the dental hygienist is employed in private practice or public health, even though the functions performed may be the same in the two settings. All provinces permit general supervision of dental hygienists in public health to some degree. Supervision requirements for private practice settings are more stringent: general supervision (direction) is permitted for almost all dental hygiene functions in British Columbia, the exception being the administration of local anesthesia. In other provinces regulatory bodies interpret supervision in a more restrictive manner. The most common situation is that a dentist must be in the same suite of offices; in some instances, it must be the dentist-employer of the dental hygienist who is present. In Ontario, the requirement for supervision is so rigid as to prohibit a dental hygienist from demonstrating correct oral hygiene procedures in a patient's mouth in the absence of a supervising dentist (ODHA, 1979, 1981). Supervision requirements for the practice of dental hygiene require review and modification to meet the demands of the modern age (Monteith, 1984).

In the United States, supervision requirements for the majority of states are much less rigid than is the case in Canada, and several states with requirements more strict than general supervision are reviewing them (ADHA, 1982).

The persistence of stringent supervision requirements for dental hygiene practice reflects a situation in which the progress and changes related to dental hygiene education and licensure are not appreciated. Dental hygienists today are graduates of recognized educational institutions and become licensed by law. Strict supervision requirements do not give recognition

of the educational and clinical competence of dental hygienists nor to the nature of the work in which they are engaged.

An informal survey of other health professions in Canada revealed that dental hygiene is unique in requiring such a high level of supervision (Johnson, 1982). It is uncommon for health professionals who must successfully complete educational programs which have been accredited and in addition may be required to pass examinations for licensure, to work only under close supervision. Both Scheffman and Applebaum (1982) and Evans and Williamson (1978) use dental hygiene as an example of unnecessarily restrictive regulations. As stated by a former Executive Director of the American Dental Association "...it is high time that we restudied supervision in dentistry and considered the norms of the medical profession in the supervision it provides for nurses who frequently and routinely are involved in lifethreatening situations, as the dental hygienist is not," (Hillenbrand, 1981). If the purpose of requiring supervision of dental hygienists is to safeguard the public, the present situation fails to take into account the low-level risk of dental hygiene procedures, as well as the high level of educational preparation and regulation of dental hygienists through the licensing process.

In British Columbia, dental hygienists have worked for decades under the direction of dentists, as opposed to direct or indirect supervision, without any deleterious effects to the patients treated. The same is true in all areas of Canada in public health settings. A survey was undertaken in 1982 by the Working Group on the Practice of Dental Hygiene of nine American states which have general supervision requirements to ascertain if there had been problems or complaints related to dental hygiene practice under general supervision (see Appendix F). The states concerned collectively had over 90 years of experience with dental hygienists working under general supervision. Only two states reported any formal complaints related to supervision. One of these did not report the number of such complaints. The other, which has almost 2,500 practising dental hygienists and has had general supervision for eleven years, reported fewer than ten complaints, none of which were serious enough to warrant disciplinary action (Johnson, 1982).

It has been argued that close supervision requirements restrict the availability of needed preventive care (Monteith, 1984; Cohen et al, 1984; Page, 1984). This is because they limit access to preventive dental services in institutions and locations which cannot afford and/or do not require the full-time services of a dentist. For example, in Ontario, a Council member of the Royal College of Dental Surgeons stated

> "...the profession has done little to improve the dental care of the institutionalized and I firmly believe that the most important factor in correcting this situation would be a change in the attitude of some members of the profession towards the meaning of supervision..." (Monteith, 1984).

Rigid supervision requirements also limit the development of alternative delivery systems which might prove more cost-effective, or complement existing services. Assessment of various types of private dental practice arrangements is also limited by the present supervision requirements.

The degree of supervision appropriate to ensure the protection of the public should depend on three factors: the degree of knowledge and proficiency of the dental hygienist, the risk involved in the procedures to be performed, and the professional judgment of both the supervising dentist and dental hygienist as to the appropriate level of supervision. The requirement of close supervision denies the supervising dentist and dental hygienist the right to exercise their own professional judgments.

5. Self Regulation

During the first few decades of dental hygiene practice in Canada, regulation through dental boards functioned reasonably well. This is still true in some parts of Canada where working relationships between dentists and dental

hygienists reflect mutual respect. In areas where dental hygienists have not been able to address their own issues, self-regulation has become a viable alternative to regulation by dental boards.

Several government committees have investigated the dental health sector and have proposed major changes in the regulation of dental hygiene. The federally-sponsored Ad Hoc Committee on Dental Auxiliaries in their Report of 1970 made the recommendation that provincial boards of dental hygiene be responsible for such areas as regulating registration, scope of practice, discipline, and complaints (Ad Hoc Committee on Dental Auxiliaries, 1970). Also in 1970, the Ontario Committee on the Healing Arts released an exhaustive study of health professions in Ontario which includes references to education and regulation. It reported that there was objection to the practice

> "...whereby one occupational group is given the power to regulate the activities of another group. In the case of dental hygienists it seems particularly inappropriate that the work of this group should be defined and regulated by a body representing the private practitioners who are their employers, a situation which could be suspected of leading to socially unwarranted restrictions being placed on the subordinate practice," (Ontario, 1970).

Other authors have reached the same conclusion: the regulation of dental hygiene should cease to be the responsibility of dental governing bodies, but should be vested in other bodies (Evans and Williamson, 1978; Scheffman and Applebaum, 1982; Timbrell, 1977). At least three choices for such a body have been proposed: provincial boards of dental hygiene (Ad Hoc Committee on Dental Auxiliaries, 1970); dental hygiene divisions of Health Disciplines Regulation Boards (Johnson, G. 1982); boards of dental auxiliary associations combining the regulation of dental hygienists, dental nurses (dental therapists) and dental assistants.

In March 1987 when the Ontario Health Minister, Murray Elston, announced that dental hygienists in Ontario had been granted self-regulation status, he stated "Giving hygienists their own separate governing body will increase their effectiveness. It will allow them to have the mechanisms and authority to address their own issues", (Ontario Ministry of Health, 1987). Dental hygienists currently are governed by the Royal College of Dental Surgeons of Ontario. They are not members of the college, and sit on the college council as non-voting observers only. In addition, most dental hygienists are employed by dentists, and this employer/employee relationship has led to regulatory disagreements. The announcement was reached after extensive consultations as part of the Health Professions Legislation Review. The review, headed by Toronto lawyer Alan Schwartz, was set up in 1983 to examine all regulated and unregulated health professions in the province. Mr. Elston said the dental hygienists' governing body will be established when new health professions legislation, expected to be introduced in 1988, is passed (Ontario Ministry of Health, 1987).

An issue which has to be resolved if dental hygiene is to be self-regulating is to determine how the scope of dental hygiene practice will be defined. In Quebec the scope of practice is determined by the provincial government in consultation with the Professional Corporation of Dental Hygienists and the Order of Dentists (Quebec Government, 1979). As stated by Rozovsky (1985) "The fact of a separate Act itself does nothing, it depends totally on the provisions of the Act."

The provisions of the Act encompass the scope of practice describing the range of activities of dental hygienists. A serial listing of permissible duties has been found to be more restrictive than defining the scope of dental hygiene practice in terms of responsibilities that are accepted activities for dental hygienists. Chapter VI describes alternative approaches and a definition of scope of practice.

6. Portability

Portability as applied to dental hygiene licensure refers to the ability of a dental hygienist licensed to practise in one jurisdiction to practise in another jurisdiction without undergoing further licensing examinations. Initially, portability was not an issue of great concern to dental hygienists. Almost all provinces allowed the registration of graduates of accredited dental hygiene programs. The exception was Ontario which at an early date initiated licensing examinations for all candidates except graduates of the University of Toronto.

In a society that has become increasingly mobile, the issue of portability has become a major concern to many dental hygienists and to the Canadian Dental Hygienists' Association (Bryant, 1983). At the 1981 meeting of the Board of Directors, Canadian Dental Hygienists' Association, portability was identified as one of four major concerns, and subsequent association activities focused on this issue (CDHA, 1981). The dilemma encountered regarding portability can be attributed to a variety of reasons. Some of these include: many programs of dental hygiene education were, for many years, not accredited; some provinces do not recognize graduation from CDA-accredited programs as a basis for registration; barriers exist in some provinces to registration after a certain number of years since graduation; one province (Quebec) has a language proficiency requirement; there are differences in scope of practice in different provinces. Since dental hygiene is composed primarily of women, the portability problem is heightened by the social norm that relocation of a husband often determines the wife's residency and place of employment. Prohibition of dental hygienists licensed in one jurisdiction from practising in another implies that quality of service varies so significantly from province to province as to give rise to public concern (Economic Council of Canada, 1981).

Table 5.5 describes provincial and territorial requirements for dental hygiene licensure. The variations depicted in Table 5.5 represent barriers for many dental hygienists who, from necessity or choice, relocate in another province. Canadian graduates of non-accredited programs face considerably more barriers than do graduates of CDA-accredited programs. Three provinces currently have no mechanism by which these dental hygienists can be licensed.

Options for Increased Portability

One option for increased portability is universal recognition of graduates of dental hygiene programs which have been accredited by a nationally-recognized accreditation agency. This could include graduates from programs in other countries recognized by reciprocal international agreements. This option may be preferable in identifying those competent to practise. Studies confirm that a more accurate assessment of competence for practice can be made over an extended period of testing and observation, such as is available during an educational program, than by means of a single licensure examination (Hangorski, 1981). Accreditation assures that methods of evaluating students reach desired standards, so that graduates of accredited programs can be deemed competent to practise.

If there is concern that the time elapsed since graduation or for those who have been absent from the workforce results in decreased level of competency for dental hygienists, this concern should apply to all dental hygienists, not just those who wish to register for the first time in a given jurisdiction. Mechanisms intended to assure competence should be fairly applied to all those wishing to practise, not just to those wishing to register.

Portability for graduates of accredited programs would still leave unsettled the question of graduates of North American programs which are not accredited. One solution would be to have a national dental hygiene examination available for these dental hygienists as well as for those educated in countries which do not have reciprocal agreements with Canada for accreditation.

Another possible option for portability is that of a national dental hygiene examination taken by all dental hygienists registering for the first

Table 5.5
Requirements for Licensure and/or Registration of Dental Hygienists by Province or Territory, 1987

Licensing Jurisdiction Province/Territory	Graduation From CDA-Accredited Programs	Graduation From Non-Accredited Programs	Graduation From Foreign Programs
BRITISH COLUMBIA	No examination (1) (2) (3)	Examination*	Eligibility to sit examinations is determined on a case-by-case basis.*
ALBERTA	No examination (3)	Examination*	Examination*
SASKATCHEWAN	No examination	No examination (4)	No provision for licensure.
MANITOBA	No examination	Examination* (5)	Eligibility determined on a case-by-case basis.*
ONTARIO	Clinical examination required	Examination*	Examination, eligibility determined on a case-by-case basis.*
QUEBEC	No examination for Quebec Graduates (6) See Table 5.1 for out-of-province graduates. Examination may be required.	No examination for Quebec Graduates (6) See Table 5.1 for out-of-province graduates. Examination may be required.	Eligibility determined on a case-by-case basis.* Examination may be required.
NEW BRUNSWICK	No examination	No provision for licensure.	No provision for licensure.
NOVA SCOTIA	No examination	Accepted for licensure if they have successfully completed Ontario RCDS examination.	May be considered for licensure if they have successfully completed Ontario RCDS examination.
NEWFOUNDLAND	No examination	No provision for licensure.	Determined on a case-by-case basis.
PRINCE EDWARD ISLAND	No examination	Determined on case-by-case basis	
NORTHWEST TERRITORIES	No examination (7)	No provision	No provision
YUKON	No examination	No examination required if approved by licensing authority.	No examination required if approved by licensing authority.

* There are written and clinical components for all examinations listed.

1. A temporary permit may be issued pending completion of the local anesthesia course.
2. Candidates must have successfully completed all examinations required as a condition of licensure in the province or state in which they completed their dental hygiene educational program. Candidates holding an American Dental Association National Board Dental Hygiene Examination Certificate issued within the preceding five years will be exempt from written examination.
3. If the date of graduation is more than five years, an examination is required.
4. The program must be recognized by the College of Dental Surgeons of Saskatchewan.

5.No examination is required if the person is licensed in the province of graduation.

6.Only for candidates from outside Quebec. Temporary one-year licence issued to those not fluent in French at time of initial registration.

7.If the candidate has graduated from a college or school of dental hygiene more than three years prior to application for registration such a person is not entitled to registration unless within three years prior to the date of his application he has: (a) practised dental hygiene or (b) demonstrated his professional ability as a dental hygienist to the satisfaction of the Commissioner. 1971 (2nd) c,4,S5.

time, such as the written examination that exists in the United States. A national dental hygiene examination could include both written and clinical components for a recognized standard core of dental hygiene functions (Bryant, 1983; Good, 1982). Successful completion of this examination would then be the criterion for registration and licensure in all jurisdictions. Accommodation for variations in scope of practice in different jurisdictions could be accomplished in one of two ways: licences could be granted on a temporary basis until the candidate successfully acquired the additional skills (such as is done at present with local anesthesia in British Columbia and language proficiency in Quebec). Alternatively, hygienists and their employers could be made responsible to ensure that the dental hygienist has acquired the necessary skills before attempting functions not specified in the core. That is, performance of additional tasks would be up to the judgment and integrity of the professionals concerned, as is expected of other health professions.

The establishment of a nationally-recognized dental hygiene examination would have several advantages. Because of the scale, it would be possible to develop examinations which would be much more valid and reliable measures than is possible for most provincial licensing examinations. A single standard would, of course, facilitate portability. Disadvantages to such an examination would be the cost of development and administration and the fact that a single examination may not provide an accurate measure of ability (Hangorsky, 1981).

A further option would be for individual provinces to recognize any dental hygienist licensed and in good standing in any other Canadian jurisdiction as eligible for licensure. This concept would be the easiest to administer, if agreement could be reached by the different jurisdictions. In November 1986, British Columbia relaxed its registration requirements enhancing opportunities for portability in Canada (CDHA, 1987).

7. Conclusions

Regulation of dental hygiene is an area of increasing concern for the profession. Many present structures and regulations limit the availability of many needed dental health services to the public. It is considered to be not only in the interests of dental hygiene but also in the public interest that issues such as supervision, portability and self-regulation be actively addressed by dental hygiene organizations and other interested groups. Changes can be made to make regulation of dental hygiene more consistent with the need for access to preventive dental health services, and the level of responsibility that dental hygienists' education and licensure enable them to assume.

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VI

DENTAL HYGIENE PRACTICE - AN OVERVIEW

Fundamental to the preparation of guidelines for the practice of dental hygiene is the description of practice characteristics. An overview of dental hygiene practice, together with a conceptual model, is presented in this chapter. Chapter VII describes characteristics of specific practice settings.

1. Sources of Information

While a general paucity of information on dental hygiene practice in Canada has limited the scope of Chapters VI and VII, four major sources exist. The first source, the Dental Hygiene Data Bank provides information, primarily demographic in nature, derived from census surveys of dental hygienists licensed and residing in Canada. In total, six surveys (average response rate over 75%)were conducted between 1976 and 1983 by Statistics Canada in cooperation with the Canadian Dental Hygienists' Association (Statistics Canada, 1976 - 1983). The second source, data from a more comprehensive census survey conducted by Lewis (84% response rate), provides information on the supply and distribution, work situations and practice patterns of dental hygienists in Canada in 1979 (Lewis et al, 1981; Lewis, 1982; Lewis and Krievins, 1982, and 1983). The third source is the background document prepared for the Working Group - Dental Hygiene Practice Settings: Moving into the 1980s (Johnson, 1982). This report, based in part on the above two sources and including a review of recent developments in dental hygiene nationally and internationally, provides an overview and an analysis of dental hygiene and dental hygiene practice. The fourth source involves a two-part survey of provincial-government dental directors and community health dental hygienists, conducted in 1981 and 1982 for the Working Group (Clovis and Fréchette, 1983). This survey provided information on dental hygienist positions in community health in Canada and on the qualifications and practice of community health dental hygienists.

There is a continuing need for accurate information about dental hygienists and dental hygiene practice in Canada, particularly now that the growth in numbers of dental hygienists has made them a significant group in the provision of dental health services (see also Chapter VIII). Periodic surveys of dental hygienists in Canada are required at intervals of approximately four years, with more comprehensive studies, similar to the Lewis survey of 1979, conducted at ten-year intervals. Subsequent analysis should be based on the dental hygiene practitioner as a unit of analysis in addition to or instead of the dental hygiene position. It is hoped that one effect of the following overview of dental hygiene practice will be to stimulate further research studies in this area.[1]

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1 In British Columbia, a provincial dental hygiene database, HYGFILE, has existed since 1974. This file, updated regularly with data supplied by the College of Dental Surgeons of British Columbia, includes variables such as age, sex, years in practice, place and year of graduation and location. A status report based on a questionnaire similar to earlier Statistics Canada surveys, was completed in 1985 (Pulcins and Lee, 1987). This survey data was updated in 1987. Also, a national study to examine the supply of and requirements for dental hygienists is being undertaken through the University of Toronto in cooperation with the Canadian Dental Hygienists' Association and the Corporation professionnelle des hygiènistes dentaires du Québec. Data sources include a national census survey conducted in 1987 to provide information on the supply and distribution, work patterns, employment situations and practice activities of dental hygienists in Canada.

2. Definition and Analytical Framework

Dental hygiene practice consists of prevention-oriented educational, clinical, and therapeutic services, as well as research activities, undertaken by a dental hygienist to promote optimal oral health and to contribute to the total health of the public. It involves the application of the dental hygienist's knowledge, judgment and skills, acquired through both education and experience.

Dental hygiene practice traditionally has been described in list form specifying procedures or tasks prescribed by legislation. These lists are associated with the clinical and primarily intraoral aspects of dental hygiene practice. As such, they limit the framework for the study of other modes of practice. The procedures legally permitted in a majority of the provinces are identified in table 6.1. For specified procedures, some provinces require short post-diploma programs. Two provinces (British Columbia and Saskatchewan) permit dental hygienists to administer local anesthetic. Saskatchewan permits dental hygienists with additional training to perform minor periodontal surgery.

An alternative approach to examining professional practice involves the concepts of role, function, setting and activity. The dental hygienist may fulfill one or more of several roles, for example that of clinical practitioner, educator, administrator, researcher, or consultant. In these roles, the dental hygienist functions at varying levels of responsibility in a variety of traditional and non-traditional practice settings undertaking a range of activities. These activities may include the legislated list of procedures noted previously. This approach, used by Johnson (1982), is conceptually broader than the traditional list of duties and is consistent with the model of dental hygiene practice presented later in this chapter. Of the four concepts which have been identified as integral to practice, more information is available on practice setting. For this reason the setting for dental hygiene practice constitutes the focus of this overview.

The term practice setting is broadly interpreted and includes all work situations where the individual is identified as fulfilling a role consistent with that of a dental hygienist. Thus, the concept of setting is expanded beyond the predominant private dental office, public health agency and dental hygiene educational institutions to include, for example, hospitals, long-term care facilities and community health centres. Recent articles in Canadian and American dental and dental hygiene journals describe educational curricula, practice settings and activities designed for those wishing to expand their roles in both clinical and non-clinical practice, both within and beyond the scope of existing legislation.[2]

As the number and variety of practice settings and the roles of dental hygienists within those settings expand, dental hygiene practice can be viewed in terms other than by clinical functions alone. This view is consistent with the perception of dental hygiene as an emerging health profession as opposed to a technical occupation. The more comprehensive definitions of dental hygiene practice and practice settings described above are appropriate for both the traditional and the evolving roles of the dental hygienist. They also more accurately reflect existing and potential practice settings.

3. Conceptual Model of Dental Hygiene Practice

Conceptualizing dental hygiene practice as a process that involves problem-solving rather than as a set of specific tasks not only

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2 For example, Cotton and Ibbott, 1985; Clovis and Fréchette, 1984; Stein, 1984; Strevens, 1984; Cotton, 1983; Feller and Forgay, 1983; Showers, 1983; Clovis, 1983; Dimitri, 1982; Gunther, 1982; Bryant, 1981; Hemming, 1981; Kolthammer, 1981; Wong, 1981; Metzger and Forrest, 1980; Brine, Rossman, and Mescher, 1979; Meskin, 1979; Miller, 1979; Darby and Bowen, 1977; Dummett, 1976; Martin, 1976.

Table 6.1
Clinical Procedures Legally Performed By Dental Hygienists, Canada, 1985[1]

The practice of dental hygiene in Canada as defined by provincial legislation consists of all or a combination of the following procedures[2]:

1. PATIENT CARE PROCEDURES
   - a) compile health history
   - b) examine conditions of the oral cavity
   - c) examine the head and neck as it pertains to dentistry
   - d) test pulp vitality
   - e) record vital signs
   - f) expose and process radiographs (intra-oral, panoramic and cephalometric)
   - g) take impressions and prepare study models
   - h) administer emergency care
   - i) scale and root plane teeth
   - j) polish clinical crowns
   - k) apply topical anti-cariogenic agents
   - l) apply pit and fissure sealants
   - m) desensitize teeth
   - n) apply topical medicaments
   - o) recontour existing restorations (removal overhangs)
   - p) polish amalgam restorations
   - q) apply and remove periodontal dressings
   - r) remove sutures
   - s) apply and remove rubber dam
2. DENTAL HEALTH EDUCATION PROCEDURES
   - a) counsel patients in oral health care
   - b) plan, conduct and evaluate community dental health education programs
   - c) conduct screenings and compile statistics for epidemiological purposes
3. RESTORATIVE PROCEDURES 2[a]
   - a) apply and remove matrix and wedge
   - b) place temporary restorations
   - c) place, carve and finish plastic restorations
   - d) place cavity liners where pulp has not been exposed
4. ORTHODONTIC PROCEDURES 2[b]
   - a) place and remove orthodontic separation
   - b) fit orthodontic bands prior to cementation
   - c) cement orthodontic bands
   - d) remove orthodontic attachments
   - e) remove excess cement following cementation of orthodontic bands
   - f) place direct banded orthodontic attachments
   - g) take orthodontic impressions
   - h) tie in prepared orthodontic arch-wires
   - i) fit space maintainers
   - j) prepare and record preliminary occlusal records
   - k) classify occlusion and identify deviant swallowing patterns
   - l) perform cephalometric tracings
   - m) provide instruction in placement and care of removable orthodontic appliances
5. OTHER PROCEDURES
   - a) administer local anesthetic 2[c]
   - b) perform minor periodontal surgery 2[d]
   - c) perform prosthetic procedures 2[e]

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1. Adapted from Canadian Dental Hygienists' Association. Dental Hygiene In Canada: Portability, Placement And Practice. Pamphlet. Ottawa, 1983.

2. Eligibility to perform some or all of these procedures is contingent upon successful completion of a short post-diploma course.
   - a) Presently all provinces except Alberta and British Columbia
   - b) Presently all provinces except in Prince Edward Island, Quebec, Ontario and Alberta
   - c) Presently only in Saskatchewan and British Columbia
   - d) Presently only in Saskatchewan
   - e) Presently only in Manitoba

enhances comprehension but facilitates the development of practice standards. To assist in this conceptualization of practice, the Working Group on the Practice of Dental Hygiene developed the schematic model presented in Figure 6.1. This model has been adapted from the basic problem-solving model as applied to nursing (Braden and Herban, 1976) and community health (Cormier and Levy, 1981). The purpose of the model is to depict the concept of practice graphically, simply, and as accurately as possible. While such a schematic model does not lend itself to scrupulous scientific study, it should be recognized as a realistic model applicable to a variety of practice modes. It is intended to stimulate additional insights into the nature and scope of dental hygiene practice.

This model uses a systems approach to emphasize the interaction of the basic components of dental hygiene practice and the resulting activities that in turn create the need for adaptation and change. The "system" in the context of this report is the practice of dental hygiene; that is, the actual performance of services and functions within a dynamic environment. Practice consists of four basic components: assessment, planning, implementation, and evaluation, linked in the model to show sequence, direction, and continuity. The lines within each component can represent elements such as duties, functions, and standards. The central circle represents efforts and activities which ensure high quality of service, including self- and externally-directed mechanisms: for example, participation in formal and informal continuing education programs to remain current with approved practice and research developments; consultations with colleagues and with supervising dentists; self analysis of learning and skill development needs; and patient and record evaluation conducted by others. The entire process occurs within and is strongly influenced by its environment. This environment includes legislated parameters of practice, current dental services research, dental hygiene education, dental health personnel, economic and social factors, the concerns of both dental health professionals and consumers of dental health services, and the specific physical environment within which the dental hygienist works.

The dental hygiene practice model can be used as a tool to review individual dental hygiene practice in virtually every dental hygiene practice setting. Table 6.2 demonstrates the application of the model to selected settings. It illustrates both the utility of examining basic components of practice and the similarities between various types of settings. The model has proven particularly useful to the Advisory Committee on the Development of Clinical Practice Standards for Dental Hygienists (see Foreword).

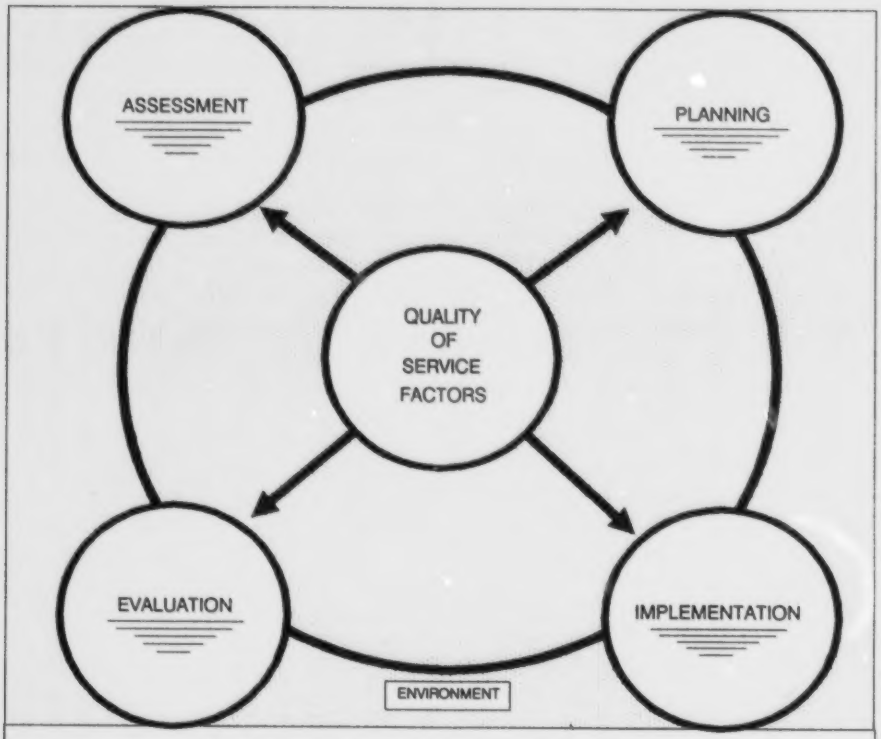
4. Historical Perspective

As noted in Chapter II, dental hygiene was recognized legally in 1907 in the United States and in 1947 in Canada. For many years, dental hygiene practice consisted of the traditional functions of oral prophylaxis, client education, exposure of radiographs and topical application of fluoride with relatively little variation (Motley, 1986 and 1973). However during the 1960s and 70s, changes occurred which were both rapid and extensive. This was the era of "expanded functions" with changes resulting in education and legislation in many individual states and provinces.

Woodall and co-authors (1985) noted the discussion that arose among dental hygienists, dentists, and other groups during those past twenty years or more. Concern was raised not only with the type of duties to be added to dental hygiene practice but also with:

> "...increasing the variety of settings and the range of responsibility and decision making a hygienist may assume. In the early 1970s the American Dental Hygienists' Association defined practice sites including hospitals, geriatric centers, penal institutions, and centers for the physically and mentally handicapped as appropriate and desirable locations for serving the public" (Woodall et al, 1985).

The Canadian Dental Hygienists' Association made a similar statement in 1981, recommending



DEFINITION OF COMPONENTS

○ ASSESSMENT	collection and analysis of data
○ PLANNING	formulation of goals, objectives, and plan
○ IMPLEMENTATION	activation of plan
○ EVALUATION	appraisal of treatment/program effectiveness
○ QUALITY OF SERVICE FACTORS	mechanisms to ensure high quality service
● ELEMENTS WITHIN EACH COMPONENT CIRCLE	may include duties / functions / standards
▨ ENVIRONMENT	includes legislated parameters, dental health personnel types, dental hygiene education, dental health research, professional and consumer concerns, physical work

Figure 6.1 Model for Dental Hygiene Practice

Table 6.2
Dental Hygiene Practice Model: Application of Four Model Components to Predominant Practice Types

Model Component	Type of Dental Hygiene Practice: Private Practice	Community Health	Education	Research
ASSESSMENT	. determine client health status . identify client history: personal, medical, dental . conduct clinical examination . diagnose dental hygiene needs	. determine community health status: . collect and analyse data . identify factors which influence oral health: socioeconomic, political, environmental etc. . determine priorities	. identify client groups and individuals . identify resources . determine educational needs	. identify research need/topic
PLANNING	. plan dental hygiene services . ensure payment	. plan program within legislated frame-work for health professionals and services . ensure funding	. develop curriculum . test curriculum	. design study . prepare grant proposal / or identify other funding sources
IMPLEMENTATION	. provide dental hygiene services: - treatment - education - counselling	. operate program	. teach client(s) . facilitate learning	. conduct research
EVALUATION	. evaluate client - recall - reassess . evaluate procedure . evaluate dental hygiene services	. evaluate outcomes: efficacy, effectiveness, efficiency . evaluate process . evaluate structure	. evaluate curriculum . meet accreditation requirements	. analyze research . assess conclusions and their implications . publish results

that dental health programs utilizing the services of dental hygienists be developed at a variety of community and institution-based sites (CDHA, 1981). This recommendation was congruent with the Association's definition of a dental hygienist that identified a range of working environments and functional capacities appropriate to the dental hygienist (CDHA, 1983).

Clinical procedures performed by dental hygienists now may include local anesthesia, soft tissue curettage, placement of restorations and selected orthodontic and prosthetic procedures, in addition to the more traditional functions. The introduction of indirect and general supervision for dental hygienists can contribute to the establishment of new settings and new practice arrangements, such as the independent contractor dental hygienist found in the United States. As with any change, not all jurisdictions and practitioners have responded with the same timing and degree of acceptance. In the 1980s, the practice of dental hygiene reflects the variations in legislation, education, school and year of graduation, individual competencies and interests, employer expectations and practice settings that exist across North America.

Johnson (1982) described the changing proportions of dental hygienists actively engaged in practice and dental hygiene practice settings in Canada. Table 6.3 outlines these changes over an 18 year period. The proportion of dental hygienists active in the workforce has increased over this period. By 1983, 81 per cent of dental hygienists in Canada were actively practising dental hygiene. The corresponding figure for the United States was 72 per cent (ADHA, 1985). With respect to work setting, a steady increase in the percentage of dental hygienists employed in private practice is evident with a corresponding percentage decrease in community health. Although a decrease from 30 per cent in 1965 to 10 per cent in 1981 has occurred in the latter setting, the actual numbers of dental hygienists employed in community health has increased. The proportion employed in post-secondary educational institutions has been declining since the mid-1970s, again primarily due to the increased numbers of dental hygienists entering private practice.

5. Classification and Distribution of Practice Settings

A variety of dental hygiene practice settings exist in Canada. Table 6.4 lists traditional practice settings and identifies the more recently emerging ones. Settings in the United States are also identified since Canadian dental and dental hygiene practices reflect some American trends in time. These categories of practice settings are described more fully in Chapter VII. It is interesting to note that in Canada the major settings for dental hygiene practice traditionally have been private dental practice, public health, and dental hygiene schools, but that the latter two settings are considered "nontraditional" in the United States (Cohen et al, 1984).

The predominant practice setting for dental hygienists in Canada is private dental practice. Of the dental hygiene positions reported in the 1983 Statistics Canada survey (see Table 6.5), 82.2 per cent were in private dental practice, with the greatest proportion of those in general dental practice (68.0%). The second largest single group was in public health (10.1%). The actual number of positions exceeds the number of dental hygienists since according to Lewis's findings almost one in five (18.5%) works for more than one employer (Lewis et al, 1981). As indicated in Table 6.5, most positions offer employment for more than the equivalent of two days per week. Also, public health agency positions are predominantly (78.5%) full-time (35 hours or more per week) compared with private dental practice positions. The Lewis survey provides greater detail on the distribution of practice settings for the year 1979. Of the total reported positions, 83.5 per cent were in the private sector and 16.5 per cent in the public sector - for example public health agencies, educational institutions and hospitals. In over 90 per cent of reported positions, dental hygiene practice involved direct treatment services for clients.

Table 6.3
Distribution of Dental Hygienists in Canada, by Type of Practice Setting and Employment Status, for Selected Years, 1965-1983.

Survey Year	Total Number of Dental Hygienists	Percentage Working In Dental Hygiene	Type of Practice Settings*			
			Private Practice	Public Health	Post-Secondary Education	Other
		%	%	%	%	%
1965	307[1]	-	61.0	31.0	7.0	-
1968	544[4]	75.0**	-	28.4[2]	-	-
1971	849[4]	75.0**	-	21.9[2]	-	-
1973	1,117[4]	76.0[3]	74.0[3]	(----------	26.0[3]	----------)
1975[5]	1,495	78.3	74.2	16.1	7.8	1.9
1977[6]	2,003	79.6	77.3	13.3	7.8	1.6
1979[6]	3,126	80.8	79.1	12.1	6.8	2.0
1981[6]	3,708	82.4	82.9	9.1	6.3	1.7
1983[6]	4,855	81.0	82.2	10.1	5.4	2.2

* These figures are not adjusted for duplication that occurs when a dental hygienist reports more than one workplace.

** Estimate of dental hygienists in the workforce.

Sources: Updated from Johnson, P.M., Dental Hygiene Practice Settings: Moving into the 1980s. (Unpublished)

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Table 6.4
Existing and Potential Dental Hygiene Practice Settings in Canada, Ranked by Prevalence, 1985

Type of Practice Settings

Traditional	Emerging	Not Evident
1. Private Dental Practice	1. Alternative Private Practice	1. Health Maintenance Organization
a) General	a) multi-location Group Practices	2. Workplace Clinics
b) Specialty	b) Retail Locations	3. Oral Hygiene Practices
(i) periodontics	2. Institutions other than hospitals, e.g. correctional institution	4. Dental Hygiene Practices
(ii) orthodontics	3. Community settings other than schools e.g. long-term care facilities	a) Independent Contractor
(iii) pedodontics	4. Dental Industry	b) Dentist-affiliated Practitioner
(iv) other	5. Union and Corporate Dental Clinics for members & employees	c) Independent Practitioner
c) Combinations of a) & b)	6. Institutions offering opportunities for research	
2. Public Health (federal, provincial, regional & municipal)		
3. Post-Secondary Educational Institutions		
4. Armed Forces		
5. Hospitals		

Source: Adapted from Johnson, P.M. Dental Hygiene Practice Settings: Moving into the 1980s (unpublished).

Table 6.5
Dental Hygiene Positions in Canada, by Type of Employer and Usual Hours of Employment Per Week, 1983*

Type of Employer	Total number	%	Hours Worked per Week: 35 or		17-34		1-16	
			n	%	n	%	n	%
1. Private Dental Practitioner -								
a. general dentist only	2,713	(68.0)	908	(33.5)	1,392	(51.3)	413	(15.2)
b. both general and specialist	425	(10.6)	113	(26.6)	195	(45.9)	117	(27.5)
c. specialist only	144	(3.6)	70	(48.6)	54	(37.5)	20	(13.9)
2. Public Health Agency	404	(10.1)	317	(78.5)	63	(15.6)	24	(5.9)
3. Post-secondary Educational Inst'n	217	(5.4)	79	(36.4)	57	(26.3)	81	(37.3)
4. Other	88	(2.2)	46	(52.3)	14	(15.9)	28	(31.8)
TOTAL	3,991	(99.9)						

* The total of types of employer would include duplicates occurring when a dental hygienist reports having more than one employer or one type of employer.

Source: Statistics Canada. Tabulations from the 1983 survey of dental hygienists in Canada. Health Division. Ottawa.

Table 6.6
Distribution of Dental Hygienists Employed in Canada, by Type of Principal Practice Setting and Province of Employment, 1983.

	Type of Principal Practice Setting					
	Private Dental Practice			Public	Post-Secondary	
Location of Employment	General	Specialty	Combination	Health	Institution	Other
Canada	2,713	425	144	404	217	88
Newfoundland	13	-	02	01	-	01
Prince Edward Island	07	-	-	07	-	01
Nova Scotia	83	21	06	26	12	09
New Brunswick	22	06	02	12	-	03
Quebec	434	39	25	162	53	22
Ontario	1,387	255	73	76	75	30
Manitoba	56	11	05	03	05	03
Saskatchewan	10	-	02	03	08	-
Alberta and Northwest Territories	92	10	05	53	10	04
British Columbia and Yukon	364	43	15	20	21	09

Note: The total type(s) of setting would include duplicates resulting from dental hygienists working in more than one type of setting.

Source: Statistics Canada, Health Division. Dental Hygiene Data Bank, 1983 survey. Ottawa, 1984. (Includes previously unpublished data.)

Statistics Canada provides information on the distribution of dental hygienists according to their principal employer, that is the one for whom they work most hours. Table 6.6 indicates this distribution for 1983. While private practice is the most frequent setting in Canada as a whole, provincial variations are apparent. For example, the high numbers of dental hygienists in Ontario, most of whom are in private practice, skew the national average.

In the Atlantic provinces, Alberta and Quebec, the proportion of public health positions is relatively high, compared with other provinces. In Prince Edward Island, the existence of a publicly funded, school-based children's dental care program which relies to a large extent on the services of dental hygienists is a major factor in that province's high proportion of public health positions.

By comparison, the major setting reported for dental hygienists in the United States in 1983 was also private dental practice (88.2%) (Cohen et al, 1984). This percentage was slightly greater than the proportion reported for Canada for that same year (82.2%) (Statistics Canada, 1983). Cohen et al (1984) also reported dental hygienists working in non-traditional practice settings as defined in the United States (see Table 6.7). Dental hygiene practice in these settings was associated with the duration of licensure and with state supervision requirements; non-traditional dental hygienists typically had been licensed longer and practised in states which permitted general supervision. Similar information on dental hygienists in Canada is not yet available.

Current information on distribution of dental hygienists according to community/population size, although available through the Statistics Canada surveys, has not been tabulated. Data from the Lewis survey suggest that in 1979 most (58.5%) of the practice settings were in urban population centres of 100 000 or more, almost one in every three (30.0%) were in middle sized centres of 10 000 to 100 000, 6.2 per cent were in population centres of 5 000 to 10 000 and 5.3 per cent in centres of 5000 or less (Lewis, 1982).

Table 6.7

Distribution of Dental Hygienists in Non-private-practice Settings in the United States, 1983
(Data from a national sample survey of practising dental hygienists n = 16,941)

Type of Non-private-practice Setting	Number	Percentage
Total	2180	109.6*
Dental or Dental Hygiene School	714	35.9
Government Supported Clinic	452	22.7
Non-government Clinic	329	16.5
Day Care, Nursery/Schools or University Health Care	312	15.7
Hospital	185	9.3
Long-term Care Facility	130	6.5
Retail Stores	35	1.8
Patient's Personal Home	15	0.8
Other Settings	8	0.4

* Note: More than 100 per cent due to multiple responses.
Source: Cohen, L. et al. "Prevalence of non-traditional dental hygiene practice." Journal of Public Health Dentistry 44(3):106-111, 1984.

6. Dental Hygiene Services

Dental hygiene practice entails four major areas of service: clinical; dental health education; instruction of dental health personnel; administration; and responsibilities in other areas including research and consulting. For 1983, the reported distribution of time spent by dental hygienists in each area (Statistics Canada, 1983) was:

	%
1. clinical services	68.5
2. dental health education	21.2
3. instruction of dental health personnel	3.6
4. administration	3.4
5. other	3.3

It should be noted that distributions for time spent on specific service activities are based on self-reported survey data and should not be interpreted as providing other than a general estimated practice profile. While dental hygiene practice itself consists primarily (almost 90%) of a combination of clinical and health education services, the actual time spent on any one area varies according to practice setting. Figure 6.2 illustrates for 1983 the distribution of each category of service responsibility by type of principal employer, a distribution that has varied little since 1976 when Statistics Canada first collected data on dental hygienists. Dental hygienists in private dental practices reportedly devote on average over 76 per cent of their time to clinical services and almost 19 per cent to dental health education. Dental hygienists working in public health agencies spend 54 per cent of their time on dental health education services, 24 per cent on clinical services, and 21 per cent on administration and other types of service responsibilities. Dental hygienists working in post-secondary educational institutions spend 72 per cent of their time teaching dental health personnel and almost 14 per cent on administrative

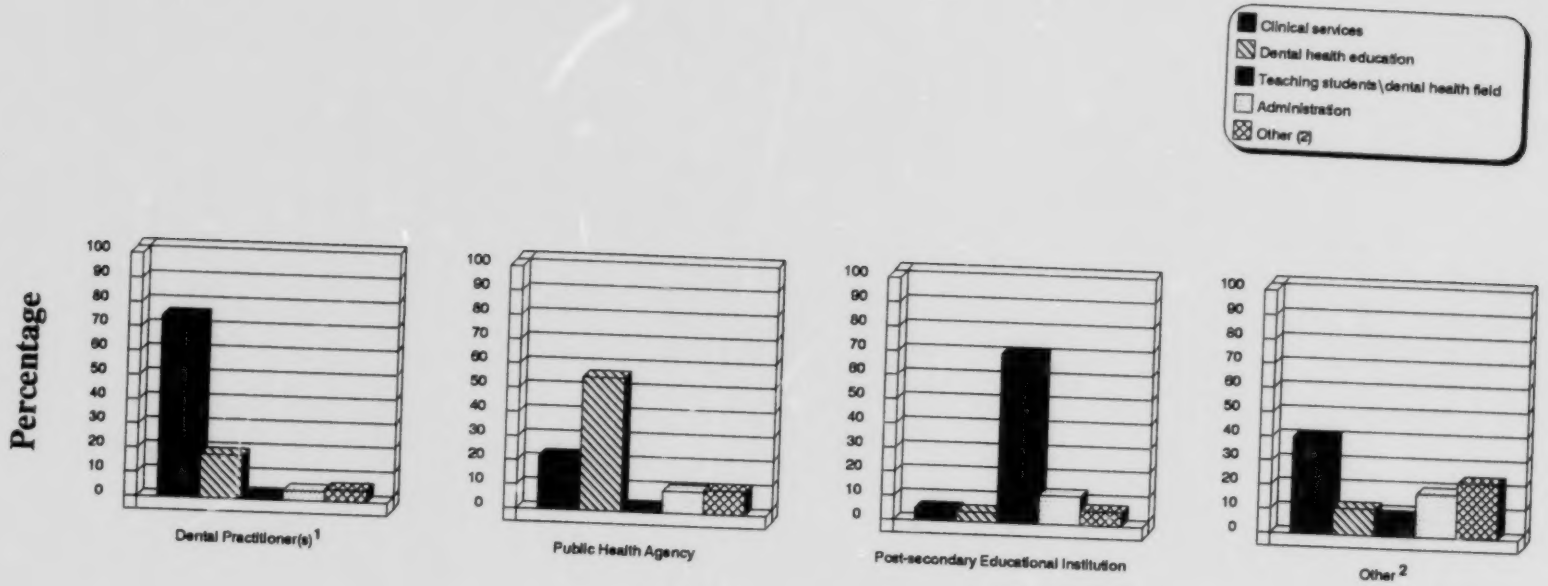

Figure 6.2

Percentage Distribution of Time Devoted, by Dental Hygienists Employed in Dental Hygiene in Canada, to Each Area of Responsibility by Type of Prinicpal Employer, 1983

1 Includes general, specialty and both general and specialty dental practitioner(s).

2 Includes dental research, consulting services as well as other areas of responsibility which could not be included among the selections offered on the survey questionnaire.

Source: *Statistics Canada. Previously unpublished data from the 1983 survey of dental hygienists in Canada. Health Manpower Division, Ottawa.*

responsibilities, and slightly less than 10 per cent on clinical and health educational services.

Similar distributions were reported in British Columbia. Over 60 per cent of 1985 survey respondents indicated that they spent at least 80 per cent of their time in clinical services; an additional 24 per cent spend between 60 per cent and 79 per cent of their time on this activity. Correspondingly, it was also found that the amount of time spent on other tasks (such as administration, research, consulting) was minimal (Pulcins and Lee, 1987).

7. Dental Hygiene Clinical Practice

The Lewis survey (1982) provides greater detail about the services which comprise dental hygiene clinical practice, although the source is primarily self-reported survey data. Findings indicate that the greatest proportion of clinical dental hygiene practice time (84.2%) is spent on three major service areas. Within these areas, certain activities are dominant. Almost 45 per cent of clinical practice time involves periodontal services, with scaling and polishing being the major activity; and periodontal services are performed regularly in 91 per cent of dental hygiene clinical positions. The second major service area is prevention (26.1% of clinical practice time) with oral hygiene instruction and topical fluoride application performed most regularly. The third major service area is oral examination (13.4% of clinical practice time).

In some service areas such as orthodontics and surgery little or no activity was reported; (Lewis et al, 1981). Similarly, little activity was reported for restorative, prosthetic and dental assisting procedures (Lewis, 1982). In many areas, regulations governing dental hygiene practice preclude or greatly restrict provision of these services. In other areas, such as prosthetic procedures, only a few provinces permit these dental hygiene functions and relatively fewer dental hygienists have had the requisite training. Also the regularity with which the additional functions are performed may be low. For example, Lewis (1982) analyzed the regularity with which six "expanded duty" restorative procedures were performed and found that the majority of procedures for which the dental hygienists were qualified were never performed. These findings have implications for educational program design and for the effectiveness and efficiency of service delivery.

Variations exist in the distribution of clinical services according to type of practice setting. In private general dental practice (the most predominant practice setting), approximately 87 per cent of dental hygiene time is spent on three clinical service areas: periodontics (48.7%), preventive services (24.8%), and oral examination (13.9%). In contrast, and as expected, public health hygienists report the least amount of time spent on periodontal services (7.8%) and the highest on preventive services (50.8%). Time spent on oral examination (14.4%) is similar in both settings. Correspondingly more time is spent in public health on administrative and other activities (19.9% versus 2.9%).

Regional variations on the proportion of dental hygiene practice time spent in major dental service areas were reported by Lewis (1982). Roughly one-half of dental hygiene practice time in 1979 was spent on periodontal functions in the provinces of Manitoba, Ontario, Saskatchewan and British Columbia. In Newfoundland, Nova Scotia, New Brunswick and Quebec, the proportion of time decreased to one-third. The low figure (11%) reported for Prince Edward Island reflects the fact that a large proportion of dental hygiene positions are with the public children's plan; however, a high rate of preventive (51%) and restorative (20%) activity was reported.

Lewis and Krievins (1982) summarized some additional findings as follows:

> "The impression that dental hygienists are generally hired into larger, well-equipped practices was borne out by the survey. The equipment in most positions was perceived by respondents to be modern. The hygienists worked in positions with just over four other staff, on

average, besides hygienists. In two of every five positions, there was at least one other hygienist employed, although the survey did not determine whether this employment occurred at the same time as the respondent worked (some double counting was also possible).

Since in the dental hygiene positions in which chairside assistants were regularly used the number of patients seen per hour was nearly 60% greater, it was interesting to note that only 10% of positions regularly utilized a chairside assistant. In the typical dental hygiene position in Canada, 1.7 patients are seen each hour. New graduates in the three years preceding the survey tended to see the fewest patients per hour. Although there was a drop in the patients seen per hour in positions occupied by the oldest graduates, the decline was very slight indeed. Hygienists working in specialty positions and in public health see more patients per hour than those in general practice positions. This finding would seem to coincide with one's general understanding of the nature of these different forms of practice. In the vast majority of post-secondary positions, patients, again understandably, were not seen at all."

In summary, dental hygiene practice in Canada typically involves the performance of traditional dental hygiene functions and is performed primarily in the private practice of a general dental practitioner.

8. Remuneration for Dental Hygiene Services

Remuneration includes method of compensation, level of income and types of employment benefits. (Information for this section may be outdated since it was taken from the 1979 Lewis survey. More current data were not available at the time this report was completed.)

The primary method of compensation is salary. Approximately 94 per cent of the 2,700 dental hygiene positions reported by respondents to the Lewis survey in 1979 were salaried positions (Lewis, 1982). Just under 4 per cent of the positions were compensated on a commission basis, with the commission percentage being, on average, 39 per cent (the median was 45 %). Of those hygienists remunerated solely on a commission basis, most worked in private general dental practice.

Lewis (1982) found that positions in metropolitan areas of 250,000 people or more paid somewhat more (approximately 12%) than those in smaller communities. Dental hygienists paid by commission had comparably higher incomes, as did those who claimed they were very satisfied with their careers. Hourly income tended to increase with years since graduation, and almost 70 per cent of the positions had involved a raise in the year prior to the survey. In most of the remaining positions, the incumbent dental hygienist had been on the job for less than one year.

More recently, data from British Columbia reveal only a very small degree of variation between the salaries of dental hygienists. Salaries were found to vary with years worked in dental hygiene, but the evidence does not suggest that salaries in dental hygiene increase with experience (Pulcins and Lee, 1987).

Employment benefits affect job satisfaction and security in addition to their direct monetary compensation. The Lewis study found that, for private practice, the extent of benefit coverage was not impressive (Lewis and Krievins, 1983). This finding is duplicated in the more recent B.C. study (Pulcins and Lee, 1987).

Another aspect of remuneration involves the extent of and compensation for overtime. In 1979, ten per cent of dental hygiene positions regularly required overtime work, and another 50 per cent required it occasionally. However, for nearly 60 per cent of these positions requiring overtime work, no extra compensation was provided (Lewis and Krievins, 1982). This is not unlike the situation in British Columbia, where paid time off was not received by a markedly high proportion of respondents for

annual vacations (23.5%), sick leave (49.5%), continuing education (62.2%) or statutory holidays (37.6%) (Pulcins and Lee, 1987).

9. Conclusions

Efforts to provide a description or even an overview of dental hygiene practice in Canada are made difficult by the paucity of data. The Lewis study and Dental Hygiene Data Bank surveys from Statistics Canada provided an interesting but outdated profile of dental hygienists and their practice as well as a data base useful for future studies.

This data base needs to be updated and expanded. Further areas which merit study include additional characteristics of dental hygiene practice and factors which influence this practice. In particular, factors which have implications for quality, effectiveness and efficiency of service delivery, and for consumer and provider satisfaction, and other important dimensions of dental health care should be examined.

The report of the May 1987 survey of all dental hygienists in Canada, conducted by the Canadian Dental Hygienists' Association and sponsored in part by the Professional Corporation of Dental Hygienists of Quebec an Patricia Johnson, should provide current information on dental hygiene practice and address some of the concerns expressed in this chapter.

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VII

DENTAL HYGIENE PRACTICE SETTINGS

This chapter identifies and describes the types of practice settings in which dental hygienists are employed in Canada. Although private dental practice has been the major source of employment, other settings exist and are described. Trends in the development of alternative settings in other jurisdictions, notably the United States, are examined in view of their potential influence on dental hygiene practice in Canada.

1. Private Dental Practice

The first registered and licensed dental hygienist to work in private dental practice in Canada was Mary Brett of Saskatchewan in 1949 (Johnson, 1982). She was somewhat unique in that, as described in Chapter II, the greater proportion of employment opportunities for dental hygienists initially occurred in public health. Positions quickly became more available in the private sector with the result that private dental practice constitutes the major setting for dental hygiene practice in Canada today. Results of the first major survey of dental hygienists in Canada, conducted by Scoles in 1965 for the Canadian Dental Hygienists" Association, indicate that at that time 61 per cent were employed in private dental practice settings (CDHA, 1965). By 1973 this proportion had increased to 74.0 per cent (Kline and Sipko, 1974), a growth which continued over the next decade. In 1983, 82.2 per cent of dental hygiene positions were in private dental practice (Statistics Canada, 1983). (See Tables 6.3, 6.4 and 6.5).

Corresponding to this increasing proportion of dental hygienists employed in private dental practice, there was a slightly slower increase in the proportion of dentists employing dental hygienists. A study of dental practice in Canada, conducted by the Canadian Dental Association in 1963, indicated that one per cent of dentists employed a dental hygienist full time and another three per cent employed one part time. These relatively low rates are not surprising since "by the end of 1963, there were only 165 hygienists practising in the whole of Canada" (CDA, 1963). Employment of dental hygienists increased. By 1984, 35.3 per cent of private practice dentists in Canada reported employing one or more dental hygienists on either a part-time or full-time basis (Ellis, 1985). In comparison, 51.3 per cent of dentists in the United States in 1983 reportedly employed dental hygienists (ADA, 1984).

While the numbers and proportions of dental hygienists in private dental practice positions in Canada have increased, their role is thought to be essentially unchanged (Johnson, 1982). Dental hygienists function as preventive clinical practitioners under the direction of a dentist. As reported in Chapter VI, "direct" client services, that is clinical and educational procedures, comprised 95.3 per cent of private dental hygiene practice time in 1983 (Statistics Canada, 1983). Information on decision-making, practice organization and productivity, role and responsibility as related to dental hygiene practice is not available. Furthermore, the effect of increased provision of services by dental hygienists on the access to, cost of and quality of client service remains an area for future study.

Selected Characteristics of Current Positions

Although currently an overwhelming majority of dental hygienists (four out of every five) work in private dental practice situations, a great variety exists in the nature and organization of these practices. Descriptions generally deal with type (general practice or specialty practice) and configuration (for example, solo or group practice). Overall, the role of the dental hygienist remains constant, given the variations in private dental practice workplaces (Johnson, 1982).

General and Specialty Dental Practice Settings

General practice is the most common type (90%) of dental practice organization in Canada (Health and Welfare Canada, 1983). Not surprisingly, it is also the predominant

workplace for dental hygienists. Sixty-eight per cent of a total number of 2,713 dental hygienists registered and practising in 1983 listed general dental practice as their primary place of employment (Statistics Canada, 1983). This percentage however does not indicate a high level of employment in this sector, since only 35 per cent of dentists in general practice in Canada in 1984 employed one or more dental hygienists part-time or full-time (Ellis, 1985). Only 19.5 per cent of general practitioners provided full-time employment for one or more dental hygienists (Ellis, 1985). In British Columbia, dental hygienists working for general dentists comprised 76.2 per cent of the sample; 54.7 per cent of this group were employed in solo general practice (Pulcins and Lee, 1987). Similarly, 61% of dental hygienists surveyed in B.C. were employed in solo practices - either general or to a lesser extent, specialty (Pulcins and Lee, 1987).

With respect to practice activities, the Dental Hygiene Data Bank indicates that dental hygienists who are employed solely or primarily by general dental practitioners spend over three-quarters (78.3%) of their time performing clinical procedures and almost one-fifth (17.9%) on dental health education, with other responsibilities reportedly minimal (Statistics Canada, 1983).

Approximately ten per cent of dentists licensed to practise in Canada are qualified dental specialists (Health and Welfare, 1983). The majority of dental hygiene positions located in specialty dental practices are found in periodontics, orthodontics and pedodontics. Within these three specialty areas, 18.9% of dentists employ dental hygienists, and the majority of these employ one full time (Ellis 1985). From another perspective, in 1983 one in ten practising dental hygienists (10.6%) worked for a dental specialist either part- or full-time (Statistics Canada, 1983).

The distribution of dental hygiene positions according to type of private practice setting, as reported by Lewis and Krievins for 1979, varies across Canada. However, they reported the following Canadian distribution:

		%
(a)	general dental practice.	71.5
(b)	specialty dental practice	8.1
(c)	combinations of general and specialty practices.	3.8

In 1979 in the following provinces, dental hygiene positions were reported to be located primarily in general dental practices (Lewis, 1982): Ontario (77.5%); British Columbia (75.7%); Manitoba (74.8%) and Newfoundland (69.2%). The lowest proportion of positions in general dental practice were found in the Yukon and Northwest Territories (50.0%), Saskatchewan (48.6%), and Prince Edward Island (14.3%). With respect to specialty practices, provinces for which the proportion was relatively high were Saskatchewan (18.9%), New Brunswick (10.3%), and Nova Scotia (9.9%). No dental hygiene positions were reported for specialty dental practices in Prince Edward Island and the Yukon and Northwest Territories in 1979. The relatively low proportion of positions in private dental practices (both general and specialty) in Prince Edward Island is related to the provincial program of dental health services for children in which a large number of dental hygienists are employed.

In comparison with dental hygienists employed primarily in general dental practice, dental hygienists in specialty practices spend slightly less time performing clinical services (75.5% versus 78.3%) and slightly more time providing dental health education (19.7% versus 17.9%) (Statistics Canada, 1983). A greater difference is apparent when comparing specific service areas. For example, Lewis (1982) found that, on average, dental hygienists working solely in specialty practices, compared with those solely in general practices, spent considerably more time on orthodontic services (20.7% versus 1.0%) - a reflection of the predominance of the orthodontic practice setting - and less time on periodontics (39.0% versus 48.7%); oral examination (8.7% versus 13.9%) and preventive services (20.7% versus 24.8%). Whether or not these differences were significant statistically has not been determined.

Solo and Group Dental Practice

Traditionally, dentistry has been practised by private solo dental practitioners on a fee-for-service basis. However, the proportion of dentists choosing this method of practice organization is decreasing. In fact there has been a slow trend away from solo practice since the 1960s with a corresponding increase in group practice (three or more dentists), partnership, and cost-sharing arrangements (Lewis, 1977). In a brief to the Federal-Provincial Advisory Committee on Health Human Resources (formerly Manpower), a Canadian Dental Association's spokesperson stated, "It is quite possible that by the end of the 1980s only 25 to 35 per cent of practising dentists will be solo practitioners and that these most probably will be in rural or low population density areas" (Drouin, 1981). In 1984 Thompson and Ellis found that 57.0 per cent of responding dentists were engaged in solo dental practice compared to 25.3 per cent in dual practices and 17.6 per cent in partnerships and other similar configurations (Ellis, 1985). They also found that 57.0 per cent of group practices surveyed employed one or more dental hygienists compared to 26.9 per cent of solo practices (Ellis, 1985).

The trend toward group practices will not necessarily result in an increase of employment opportunities for dental hygienists. Group practice arrangements may create different employment conditions which potentially could influence the process of client care, career satisfaction, technical efficiency through substitution of labour, and other aspects of practice. Among the potential benefits associated with group practices are the increased and improved utilization of allied dental health personnel (Jerge, 1974) although, as Bailit and Kudrle (1983) note, these and other benefits have yet to be demonstrated.

Alternatives in Dental Practice Organization

The decline of the solo practitioner and the corresponding increase in group practice and other arrangements was a phenomenon of the 1970s. Even more profound changes in practice organization were predicted for the 1980s, although the traditional independent practitioner, fee-for-service method of organization was expected to be predominant (Ont. Dental Assoc., 1981; Bailit and Kudrle, 1983).

The United States has seen the establishment of several alternative methods of funding, delivering and marketing dental health services. Dentistry in Canada is beginning to reflect some of these changes. The major types of alternative practice arrangements include multi-location group dental practices, "retail" dental practices located in department stores and shopping malls, union-operated clinics, and private dental emergency services. Some of these arrangements include capitation, an alternative payment mechanism to the traditional fee-for-service.[1] The most rapidly growing of these practice arrangements in Canada appears to be the "retail" dental clinic. Designed to attract current non-users of dental services to increase client volume, "retail" dentistry offers features such as extended hours of operation coinciding with those of the retail location, a publicly-posted fee schedule, and no requirement for advance booking of appointments. The major chain of such dental service locations in Canada, Tridont Dental Centres, has grown from one outlet in 1980 to 64 in 1985 (Ferguson, 1985), an expansion rate not typical of other "retail" organizations. Other practice

1 Capitation is an alternative to fee-for-service and salary methods of reimbursement. It involves a prepaid fixed per capita payment accepted by a dental practitioner in return for provision of pre-determined dental health services as required by an enrolled population for a specified time period, usually two to three years. Theoretically, it is an incentive to maintain clients in a state of dental health, requiring minimal curative services.

configurations, such as franchised dental practices, practices structured within Health Maintenance Organizations[2] and oral hygiene clinics, (which exist in the United States and have implications for dental hygiene practice), have not materialized to date in Canada.

Implications of the Private Dental Practice Setting For Dental Hygiene Practice

As Johnson (1982) notes, the predominance and specific characteristics of private dental practice have implications, as yet not fully understood, for the education and regulation of dental hygienists and for the provision of dental health services. For example, it is interesting to note that dental hygienists working in private general dental practice (in comparison with other practice situations, both private and public), reportedly are more satisfied with the quality of their dental hygiene education as preparation for their current positions. Lewis (1982) reported that 79 per cent of responding dental hygienists employed in general dental practice indicated that their educational preparation was satisfactory. On the other hand, 48 per cent of dental hygienists employed in either specialty dental practices or in public health, reported that their dental hygiene education had not prepared them adequately. Lack of specific training was cited as the most frequent deficiency (Lewis, 1982).

With respect to factors influencing productivity, Lewis found that just 10 per cent of those dental hygiene positions involving direct clinical treatment regularly utilized a chairside assistant for the dental hygienist; just over 34 per cent of positions utilized an assistant occasionally, and 55 per cent never had one available. In fact, 34.3 per cent of the positions involving direct clinical treatment did not have an assistant available to perform non-chairside duties such as developing radiographs (Lewis and Krievins, 1982).

With respect to professional interaction in the workplace, the average dental hygienist in clinical practice works in a setting with at least four other non-hygienist individuals. However, only 40 per cent of dental hygienists are employed in settings that employ more than one dental hygienist (Lewis and Krievins, 1982). There may be little opportunity even in those situations where more than one dental hygienist is employed, for collegial communication or for peer consultation, since the days of employment may not correspond.

This general profile of dental hygiene varies provincially. It may also vary by type of clinical practice setting, for example, private versus public and general versus specialty. Unfortunately, complete tabulations and analysis of data from the Lewis study, the most comprehensive data source on dental hygiene practice in Canada, are not available. Such other studies as exist, both in Canada and the United States, focus primarily on dental hygienists performing "expanded" functions. Data from the 1979 Lewis survey were tabulated mainly by type of position and by geographic location; type of workplace or practice setting was not used as a variable in this particular set of tabulations. It would appear that a new study, based in part on the earlier 1979 Lewis design, is required to properly assess dental hygiene practice. Various aspects of practice organization and conditions of employment need to be examined to determine their effect on activity, productivity, and quality of dental hygiene services.

The effect of alternative modes of dental practice organization on dental hygiene employment and practice is by no means clear and will need to be assessed on an ongoing basis. Many of the "new" organizational approaches adopted emphasize the need for good management and cost-effective techniques. Assessment of employment arrangements and development of appropriate roles for dental hygienists would be in keeping with this emphasis. In addition to anticipated benefits associated with substitution of labour (dentist:

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2 Health Maintenance Organizations (HMOs) are formally-organized health care delivery systems that provide comprehensive services to voluntarily-enrolled memberships for a fixed, prepaid fee.

hygienist), it has further been suggested that a dental hygienist can function effectively in an office management capacity in both traditional and non-traditional private dental practice (Meskin, 1979). While a small number of Canadian dental hygienists have been identified as working in the capacity of office managers (Johnson 1982) both in solo and in multi-location group practices, little is known of their specific roles. Some, but not all, dental hygienist-managers surveyed reported that they had developed additional complementary skills through post-diploma courses and programs. It remains to be seen whether opportunities within private dental practices for dental hygienists to assume more administrative and managerial functions will increase and whether dental hygienists are prepared for this potential role.

Factors Influencing the Role of the Dental Hygienist in Private Dental Practice

Private dental practice settings will probably remain the most common workplace for dental hygienists in Canada. Johnson (1982) has identified the following three factors as those expected to be most influential on the practice of dental hygiene as it occurs in the private dental practice setting.

The Dentist's Perception of the Dental Hygienist

The most influential factor affecting dental hygiene practice in private dental practice is the dentist's perception of appropriate dental hygiene practice. As the focus of health shifts to considerations of wellness and self-care, the role of the dental hygienist in health promotion and prevention of disease could become more significant. However, organized dentistry has been somewhat reluctant in the past to recognize the potential of dental hygiene as an emerging health profession. As evident in much of the dental literature, dental hygiene has been viewed as an auxiliary occupation to dentistry or, equally limiting, a technical occupation.

There has been a lack of recognition on the part of many dentists and a significant portion of the public regarding the capabilities of dental hygienists. This lack is considered to be a major constraint limiting the contribution of dental hygienists to oral health (also see Chapter V). This view, seen as outdated and inappropriate for educated and credentialed persons who provide direct patient care, remains a major factor influencing the development and practice of dental hygiene and is a view dental hygienists are seeking to change.

As a dental health professional educated primarily to provide preventive dental health care, dental hygienists have come to perceive their role as distinct from, yet complementary to, that of dentists. This type of relationship in the private dental practice setting has been described by Darby (1983) as "collaborative practice". In the collaborative practice model, dental hygienists are considered to be knowledgeable about their field and are consulted with respect to appropriate dental hygiene care. They make decisions concerning clinical dental hygiene procedures and are responsible for the client's dental hygiene care, while the dentist retains responsibility for the client's overall dental health care (Darby, 1983). This collaborative approach has been applied to the management of clients with periodontal disease or special needs (Cotton and Ibbott, 1985; Martin, Stewart and Stone, 1986).

Dental hygienists are often in a position to identify appropriate new roles for themselves in the various practice settings. They can benefit from learning the requisite skills to become effective change agents in order to implement these roles.

The official positions of organized dentistry are undergoing some review and restatement at the present time. These changing perspectives may well foster the development of a more collaborative approach to dental health care.

The Over-Regulation of Dental Hygiene Practice

The second major factor influencing the role of the dental hygienist in private dental practice is over-regulation due to restrictive legislation. This constraint has been discussed in Chapter V. Procedures suitable for the practice of dental hygiene should not require specific review and regulatory decision. As with other professions, it is accepted that dental hygiene

practitioners are appropriately educated and skilled prior to performing new skills. This rationale makes the assumption that both the dentist and the dental hygienist concerned will not agree to the delegation of any function without being assured of the competency of the hygienist and the appropriateness of the directive.

The chief argument raised against dental hygienists assessing a client's dental hygiene needs and serving in a case-finding capacity has been that dental hygienists are not permitted, nor educated, to perform diagnosis. In addressing this question Dunning, professor emeritus of the Faculty of Dentistry, Harvard University, notes:

> "It is a serious oversimplification to suppose that diagnosis occurs only at one level and cannot be repeated or expanded. The highest diagnostic level, of course belongs to the fully trained dentist. Even here, the general dentist should defer to the specialist if one is available. Lower levels of diagnosis exist also - the lowest of all being that of the layman who decides he needs dental treatment. At intermediate levels, the hygienist has long performed inspection, which is a form of diagnosis."

and concludes:

> "It is time, therefore, for the dental profession to learn to delegate certain simpler phases of diagnosis without the fear that a birthright has been sold." (Dunning, 1976)

It can be argued that it is in the public interest to do so, irrespective of a presumed "birthright". Not only can efficiency in private dental practice be improved through substitution of labour but quality also may be enhanced in those procedures for which dental hygienists possess expertise. Further, under direction, the dental hygienist can function in a case-finding role by seeing homebound and institutionalized clients. Consequently, the services provided through private dental practice can be extended to currently unserved groups.

Even within the confines of existing regulations, dentists have the capacity to utilize dental hygienists more effectively and, by doing so, improve the quality of care (ADHA, 1983b; Born, 1983). Studies (Cohen, 1981; Catherman, 1983) indicate that dental hygienists are better prepared than most dentists in the performance of scaling and root planing procedures, determining sulcus depths and other periodontal services.

Many dental hygienists would welcome a broader role in other areas. Such roles can involve myofunctional therapy, screening for cancer detection, management of dental health maintenance programs, prenatal dental health education counselling and other services. Development of an expanded role is not solely the responsibility of the employer-dentist. Dental hygienists should actively research and develop proposals for and work to implement an expanded role within their practice settings.

Perceived Over-Supply of Dental Health Personnel

The third and possibly most critical determinant of the role of the dental hygienist in private dental practice, at least in the near future, is the perceived surplus of human resources in the dental field (see also Chapter III). If the dental profession fails to take steps to expand the demand for and to increase access to dental health services, employment opportunities for dental hygienists may decline (see also Chapter VIII). This possibility has been recognized by the dental profession and by others. For example, a spokesperson for the Canadian Dental Association has stated publicly, and in reference to the dental hygienist, that in difficult economic times "the more highly trained auxiliary may be the first to go" (Drouin, 1981). Given that organized dentistry, through its formal and informal powers, defines employment opportunities (and other matters) for other dental health personnel, dental hygienists in North America may face economic hardship unless changes in dental and dental hygiene practice and the service delivery occur.

2. Community Health

Dental hygienists practise in a variety of community-based health service settings including the traditional health unit (formerly called public health unit) and to a lesser extent in health care institutions. Community health in this report is used in its broadest sense to refer to those structures, facilities and activities that the community uses to conserve its collective health. Traditionally, dental hygienists employed by government-funded, non-institutional health agencies have been termed public health dental hygienists. The term "community health" dental hygienist has more recently been adopted and is more consistent with the current concept of community health. Community health dental hygienists are currently employed by federal, provincial, regional and municipal agencies across Canada and deliver dental health services in such facilities as publicly funded health clinics, schools, hospitals and centres for the disabled. Their client group, while primarily children, is expanding to include adults, expectant parents, the disabled and the elderly.

This section on community health describes the role of the community health dental hygienist in three different settings: health unit, institution and, in the future, in the primary care centre.

Health Unit Setting

The impetus for the establishment of dental hygiene in Canada came from provincial departments of health (see Chapter II, History). Financial assistance for dental hygiene trainees was offered through National Health Grant bursaries. The employment of dental hygienists in public health dates back to 1949. Health units are considered the traditional community health practice setting.

Four classifications of community health dental hygienists working in health unit settings were recognized by the Canadian Public Health Association (1970): staff dental hygienist, senior dental hygienist, supervisor and consultant. Most positions are currently classified at the staff (group 1) level (Clovis and Fréchette, 1984). Since little differentiation appears to exist between the few senior and supervisory dental hygiene positions, only three classifications are generally recognized by most dental health divisions. Table 7.1 presents the major characteristics of the four classifications of community health dental hygiene positions in health units and Table 7.2 shows the number of positions available for dental hygienists in 1986.

The data in this report, describing the characteristics of community health dental hygienists in health units, have been extracted primarily from the survey conducted in 1982 by Clovis and Fréchette (1984) on behalf of this Working Group.

In 1982, 10 per cent of the community health dental hygienists surveyed had post diploma qualifications while another 15 per cent were engaged in further studies leading to a degree. Interest was expressed in pursuing studies specifically related to community health including gerontology, "special needs" client groups, adolescent dental health, teaching skills, administration, epidemiology, data gathering and analysis, program planning and evaluation, and computer technology. At present, availability of professional development activities in these areas is limited.

Job Description

In Canada, dental hygienists in health unit settings have long performed services such as dental health screening and referral, supervision of self-applied fluorides for school children, oral prophylaxis, topical application of fluorides and dental health education in the classroom (French, Johnson and Bowen, 1983). Accounts of traditional roles are numerous and serve to define those practice aspects which are unique to public health (Hamilton, 1978; West and Russel, 1978; Bowen, 1977; Marshall, 1969). Although dental hygienists can provide a broad range of services in health education, clinical practice, health promotion, health program development, consulting, administration and research, their capabilities tend not to have been utilized to their full potential (American Dental Hygienists' Association, 1975; Clovis and Fréchette, 1984). The career structure for

Table 7.1

Classification of Dental Hygienists Employed in Health Units in Canada

Description	Group I	Group II	Group III	Group IV
1. Position or Title	Staff hygienist	Senior hygienist	Supervisor hygienist	Consultant hygienist
2. Responsibilities	Dental health education Preventive dental procedures May supervise dental assistant or clerk	Group I plus: Supervise staff hygienists, assistants and clerks Assist in program design, planning and implementation Assistant to Group III hygienist	Group II plus: Greater supervisory responsibilities for staff Responsibilities for program design, planning and implementation Responsibilities for a larger service population with an increased organizational role	Functions at the federal or provincial level primarily Advises national and provincial health, educational and professional groups Supervises hygienists at the provincial level Assists in development and maintenance of dental health education programs Other
3. Reporting to	Full-time dental officer or group II hygienist	Full-time dental officer or group III or IV hygienist	Full-time dental officer, group IV hygienist or other	
4. Qualifications	Dental hygiene diploma Eligible for provincial licensure	Group I plus: Minimum 3 years public health or equivalent experience Postgraduate training in related areas is desirable	Group II plus: Baccalaureate degree in a directly related field	Group III plus: Master's degree in a directly related field Minimum three years experience in dental hygiene
5. Salary Scale	Commensurate with group classification, qualifications and responsibilities			

*Source: Canadian Public Health Association, 1970

Table 7.2
Community Health Positions Available for Dental Hygienists in Canada, by Province and Classification, 1986

		Type of Dental Hygiene Position				
	Number of Positions	Group I Staff	Group II Senior	Group III Supervisor	Group IV Consultant	Positions Vacant
Federal Service	6	5			1	
British Columbia	24	16	7		1	5
Alberta	104	81	21		2	12
Saskatchewan	3	2	-	-	1	-
Manitoba	2	1	-	-	1	-
Ontario*	78	66	12		-	-
Quebec	230	227	3		-	5
New Brunswick	20.5	19.5	-	-	-	2.5
Nova Scotia	21	21				4
Prince Edward Island	6	4	1	-	-	1
Newfoundland	6	5	-	-	1	4
Yukon	0					
Northwest Territories	0					
Total for CANADA	500.5					35

Source: Survey of provincial and/or regional dental directors, 1982, updated in May 1986.

* Ontario data as of December 1985 (Approximately 30 additional positions to be phased in by 1988).

dental hygienists within community health also has been limited (Johnson, 1982a; West and Russell, 1978; American Dental Hygienists' Association, 1975).

School children and pre-school children are the primary client groups served by community health dental hygienists (Clovis and Fréchette, 1984). More recently, children in other school settings such as those for the hearing impaired, mentally disabled and special education classes have been included. Other major client groups include adults, expectant parents, the handicapped and the elderly.

Although the community health dental hygienists' activities in the health unit setting are predominantly oriented to children, services such as the following are being provided to other groups:

- counselling for parents and expectant parents;
- denture identification programs for the elderly;
- in-service training sessions for teachers, health unit personnel and health care personnel in hospitals and other institutions;
- career counselling in high-schools and universities;
- dental health educational programs for special groups (e.g. new immigrants);
- general dental health promotion (e.g. dental health month);
- monitoring of fluoridated community water supplies.

In addition to the traditional services cited above, other clinical services provided include the application of sealants, placement of restorations, construction of mouth guards and

taking of radiographs with the distribution varying regionally. The level of clinical activity in 1982 varied from 29 per cent in Quebec to 100 per cent in New Brunswick and Nova Scotia where publicly-funded denticare programs exist (Clovis & Fréchette, 1984).

Other surveys have reported clinical activity in terms of proportion of time spent. Statistics Canada (1983) suggested that 30 per cent of community health dental hygienists' time was clinical; another recent survey reported a higher percentage of 52 per cent (Lewis and Krievins, 1983b). For dental hygienists who reported clinical activities, the greatest proportion of time (51%) was devoted to preventive procedures such as oral hygiene instruction, application of topical fluoride and sealants and diet counselling. Eight per cent of time was spent in periodontal treatment (scaling and polishing, root planing, curettage, and other periodontal procedures) and 10 per cent in administrative duties (reception, ordering supplies, paperwork).

Dental hygienists are involved in the planning and evaluation of the above service programs; for example, 80 per cent of the community health dental hygienists surveyed in 1982 reported planning activities such as writing objectives, identifying needs, collection of data and training staff. One-third reported administrative responsibilities including supervision of staff, writing of reports, preparing budgets, scheduling staff activities and maintaining an inventory of supplies and equipment.

Noteworthy accomplishments of dental hygienists in the health unit setting include development of dental health education materials which have received national and provincial recognition. The Canadian teacher's guide to dental health (Health and Welfare Canada 1981b) was developed primarily by dental hygienists with contributions from dentists, nutritionists, teachers and others with an interest in teaching dental health in Canadian schools. Publications designed to help children (Desclez, Langlois, Léger, 1984), parents (Alberta Social Services and Community Health, 1986, 1979; Langlois and Ashby, 1983) handicapped children and their parents (Fréchette et al, 1984), and the older adult (Clovis, 1986) have been developed by community health dental hygienists.

Working Relationship with Other Professionals

There appear to be few formalized structures or organizations through which community health dental hygienists integrate their services with other health professionals. Most interactions, reported in 1982, were for the purpose of sharing information concerning specific clients or for work on special committees or projects (Clovis and Fréchette, 1984). Nurses were cited by community health dental hygienists as the individuals most frequently contacted (87%), followed by nutritionists (75%). Respondents also reported interaction with dentists (73%), dental assistants (55%), and speech and occupational therapists (40%) in the performance of their duties.

Many respondents named additional persons as work contacts. The actual list of all "other" work contacts included social workers, physicians, psychologists, physiotherapists, stenographers trained in charting, dental nurses, community workers, receptionists, teachers and nursing assistants. Public health inspectors were frequently contacted for consultation concerning the fluoridation of water supplies (Clovis and Fréchette, 1984).

Institutional Practice Setting

Institutional practice settings, in addition to acute care hospitals, include long-term care and correctional institutions. Long-term care institutions include chronic care and rehabilitative/convalescent facilities for such client groups as the emotionally disturbed, the mentally or physically handicapped and elderly persons with medical disabilities. At present, dental hygienists are employed in all these practice settings to some degree; however, the data in this report are limited due to the difficulty of identifying all the dental hygienists employed in institutional settings.

A 1982 survey of provincial and regional dental directors and institutions is the basis for the following information. Eight provinces reported

Table 7.3
Health Care and Correctional Institutions Employing
Dental Hygienists, Canada, 1986

Province	Name of Institution	Type	Number of Dental Hygienists Employed	
			Full-time	Part-time
ALBERTA	Alberta Children's Hospital, Calgary	Children's Hospital		1
BRITISH COLUMBIA	*Tranquille Residence, Kamloops	Residential and Training Centre for Mentally Retarded	1	
	UBC Health Sciences Centre Hospital, Vancouver	Acute, Extended and Psychiatric Care Hospital		2
	Cancer Control Agency, Vancouver	Cancer Patient Care Facility		1
	Oakalla, Burnaby	Correctional Centre		1
MANITOBA	Winnipeg Health Sciences Centre, Winnipeg	General Hospital		1
	St. Amant Centre for Mentally Retarded, Winnipeg	Mental Retardation Centre (Children)		1
NEWFOUNDLAND	Dr. Charles A. Janeway Child Health Centre, St. John's	Children's Hospital	1	
NOVA SCOTIA	Camp Hill Hospital, Halifax	Acute, Extended and Psychiatric Hospital		1
	Nova Scotia Hospital, Dartmouth	Psychiatric Hospital		1
ONTARIO	Hospital for Sick Children, Toronto	Children's Hospital	3	
	Children's Hospital of Eastern Ontario, Ottawa	Children's Hospital	1	
	Rideau Veteran's Home, Ottawa	Veteran's Hospital	1	
	Midwestern Regional Centre, Palmerston	Retarded Children and Adolescents Hospital	1	
	Queen Elizabeth Hospital, Toronto	Chronic Care Hospital	3	
	Crippled Children's Centre, Toronto	Centre for Handicapped Children	1	
	Lakehead Psychiatric Hospital, Thunder Bay	Psychiatric Hospital		1
	Burritts Rapid Prison Farm, Ottawa	Penal Institution		1
	Toronto Western Hospital, Toronto	General Hospital		1
	Mount Sinai Hospital, Toronto	General Hospital		2
	St. Michael's Hospital, Toronto	General Hospital		2
	Parkwood Hospital, London	General Hospital		1
	Ottawa Civic Hospital, Ottawa	General Hospital	1	
	St. Vincent Hospital, Ottawa	Chronic Care Hospital	1	

Table 7.3 (cont'd)

Province	Name of Institution	Type	Number of Dental Hygienists Employed	
			Full-time	Part-time
	Chedoke - McMaster Hospital, Hamilton	General Hospital	1	
	National Defence Medical Centre, Ottawa	Military Hospital	1	
	Huronia Regional Centre, Orillia	Mental Retardation Centre	1	
	Kingston General Hospital	General Hospital	1	
QUEBEC	Hôpital Louis-Hippolyte LaFontaine, Montréal	Psychiatric Hospital for Adults		1
	Hôpital Rivière-des-Prairies, Montréal	Psychiatric Hospital for Children	1	
	Hôpital Marie-Enfant, Montréal	Handicapped Children	2	
	Hôpital Sainte-Justine, Montréal	Children's Hospital	1	
	Montréal Children's Hospital, Montréal	Children's Hospital	2	1
	Jewish General Hospital - Sir Mortimer	General Hospital	1	
	Ste-Mary's Hospital, Montréal	Clinque d'atrophie des maxillaires (General Hospital)	1	
SASKATCHEWAN	Regional Psychiatric Centre, Saskatoon	Federal Prison		1

* April 1983 - Tranquille Residence closed.

Source: Survey of Provincial and Regional Dental Directors and Institutions known to Employ Dental Hygienists, 1982 (Working Group on the Practice of Dental Hygiene). Updated, S. Fréchette, March 1983; Kline, 1986, B.C. only; Dungy, 1986.

employing dental hygienists in health care and correctional institutions. Table 7.3 lists examples but is by no means exhaustive. The provinces of New Brunswick and Prince Edward Island did not employ dental hygienists in institutions at the time of the survey.

In many institutions, the role of the dental hygienist is similar to that in private practice; for example, dental hygienists employed in general practice and penal institutions provide primarily preventive clinical services to clients. In other institutions, such as the children's hospitals, psychiatric care institutions and chronic-care facilities, the role of the dental hygienist appears to be more varied. The latter settings involve the dental hygienist more extensively in developmental and coordinating activities as well as in providing technical services. The extent of the role in specific institutions appears to have developed primarily through the keen interest, initiative and innovative participation of the individual dental hygienist (Bryant, 1981; Kolthammer, 1981; Vause, 1981; Scanlan, 1979; Boyce, 1978).

Some or all of the following services are provided by dental hygienists in the institutional setting:

1. Preventive clinical procedures including oral examination, radiographs, prophylaxis, topical fluoride therapy.
2. Dental health education for individual resident and out-care clients. These included individual oral hygiene instruction, nutritional counselling, diet analysis, client home care counselling.
3. Counselling of parents individually or in groups.
4. Teaching dental health education classes as part of the pre- or post-natal programs.
5. In-service dental education and training sessions for direct care hospital staff: ward nurses, dietitians, physiotherapists, instructors of pre- and post-natal classes, student nurses, etc.
6. Dental health education classes for groups of handicapped clients.
7. Development of innovative techniques and/or preventive aids to assist clients in overcoming mental or physical handicaps to preventive self-care.
8. Assisting members of the health team in the development and implementation of total patient care plans (e.g. cleft palate, cystic fibrosis and geriatric programs).
9. Designing of health education materials.

The provision of dental hygiene services in the institutional setting is currently limited in most regions by supervision requirements for dental hygienists which, in effect, defeat the cost-benefit of employing dental hygienists. Consequently, some segments of the population are deprived of preventive services. In parts of Canada, there is strong objection to the need for supervision (Monteith, 1984). The State of Washington in the United States permits dental hygienists to provide services in health care facilities without dental supervision (ADA, 1984c; Washington, 1985). Regardless of the supervision requirement, there is a trend towards the provision of more dental hygiene services in institutions and this trend is advocated by many providers of care (University of Manitoba, 1983; Ambrose, 1981).

Primary Care Centres

Primary care health centres are potential settings for community health dental hygienists. They are community-based clinics which have unique funding and client care systems. Funding may be provided through combinations of public and private agencies; patient care may be provided on a fee-for-service, prepaid or combination basis. Staff may be salaried, contracted on a capitation basis, accepted as shareholders, or remunerated in some other manner. Health Maintenance Organizations in the United States operate primary health care centres and their experience is stimulating interest in this health care delivery system as an alternative for Canada. Dental hygienists could provide screening, assessment, and preventive services in the setting of a primary health care centre (Cormier and Levy, 1981).

Factors Influencing Future Roles

Factors influencing future roles for dental hygienists in community health include therelative supply of human resources, the development of suitable post-diploma degree programs in dental hygiene, modification of restrictive legislation, and the changing oral health status of Canadians. The degree of program development and the development of program standards will also have significant effects.

Although a surplus of dental hygiene human resources has been forecast by some (Canadian Dental Association, 1980; House, Johnson, and Edwards, 1982) this does not yet appear to be a reality. In fact, the increased supply of dental hygienists may have resulted in a higher proportion of community health positions being filled in recent years. The salary differential in favour of private practice positions has historically been a deterrent to the recruitment of dental hygienists in the public sector (Mason, 1978). Although growth in the public dental sector is expected to be slow, (Canadian Dental Association, 1980) additional responsibilities in administration and program development may be available for qualified dental hygienists. Community dental health, as well as private practice, will feel the effect of increased retention of dental hygienists in the labour force (Lewis and Krievins, 1982). A significant implication of an increased supply of dental personnel is that, for the first time, an adequate labour force will exist so that governments can apply the necessary resources to meet the dental health needs of those Canadians who are currently underserved.

Regulation of dental hygienists in community dental health has always been somewhat different than for those in private practice. Although the practice of dental hygiene has been generally the same, the requirement for supervision has always been less stringent for dental hygienists in community health - the presence of a dentist at the worksite is not required. In spite of the longstanding nature of this arrangement, no reported incidents of risk to the public have ensued. The definition of dental hygiene practice by means of a serial listing of permitted functions seems to have curtailed the potential effectiveness of community health dental hygienists. A more comprehensive concept of dental hygiene practice would permit more flexible and creative utilization of dental hygienists in the community health setting. Even within the existing scope of dental hygiene practice, dental hygienists have identified many ways in which their contribution to the communities they serve, and their satisfaction with their jobs, could be enhanced (Clovis and Fréchette, 1984).

Within the sphere of community health, there is a trend towards the development of standards for services either recommended by recognized health agencies or mandated by provincial legislative bodies. In Alberta and Quebec, for example, recommendations have been made for minimal dental components in community health programs (Health Unit Association of Alberta, 1982; Quebec, 1982). In Ontario, the public health act mandates core programs with standards for preventive dental programs (Canadian Dental Association, 1982). There is a move in many provinces towards accreditation of health units, although currently there is no consensus regarding a national system (Ontario Council on Community Health Accreditation; Federal-Provincial Advisory Committee on Community Health, 1985; Health and Welfare Canada, 1981a), implying a standard of services to which community health programs can be compared. As community health program standards evolve, and specific services become mandated, the definition of the role of dental hygienists in community health may become clearer.

The changing oral health status of Canadians will also influence the roles for community health dental hygienists. Since in many areas declining rates of dental caries in children are well documented (Glass, 1983; American Dental Association, 1982; Canadian Dental Association, 1980; Payette, 1985), it becomes increasingly important to obtain current data about dental caries and high-risk groups for program planning purposes. There is no apparent decline in periodontal disease (American Association of Public Health Dentists, 1983). In fact, with more people keeping their teeth longer and the

population as a whole aging, needs for periodontal disease prevention and treatment may increase (American Dental Association News, 1982; Craft, 1982; National Institutes of Health, 1983) and dental hygienists may have a new role in community health periodontal programs and community education (Catherman, 1983). Changing patterns of oral disease influence planning for target groups who have not been served by the traditional community health programs.

Potential Future Roles

In the face of these influencing factors and the advances made through research in preventive dentistry, role changes for dental hygienists in community health settings are possible. For example, dental hygienists in community health could identify high risk groups for intensive preventive therapy through the use of microbiologic methods (Krasse, 1984). Furthermore they could place sealants as a preventive measure in community health programs (Robert Wood Johnson Foundation, 1983; National Institutes of Health, 1983).

Dental health education will no doubt continue to be a major area of endeavour for the community health dental hygienist. The dental hygienist's responsibilities in this general field could be expanded and redefined to give more attention to the broader area of health promotion (Health and Welfare Canada, 1986). Health promotion is distinguished from health education by the positive orientation of health promotion to encourage "higher levels of wellness for a better quality of life rather than the adoption of behaviours to prevent specific illnesses and diseases" (Harvey, 1982). "Health promotion is the process of enabling people to increase control over, and to improve their health" (Health and Welfare Canada, 1986). The concept of health promotion recognizes more fully the complexities and interrelationships of factors and activities contributing to health behaviours. The achievement of an adjusted fluoride level in a community water supply, for example, is a health promotion activity which involves advocacy, health education, organization of community support, political lobbying, and legislative action. The community health dental hygienists could play an integral role in each of these activities to provide a means of achieving health for all Canadians.

Furthermore, the community health dental hygienist could spend more time as a community level oral health consultant in teacher education, parent education, prevention of traumatic injuries, curriculum guidance, career guidance, liaison with the dental profession, home consulting, myofunctional therapy, and oral cancer screening (Richardson and Atkins, 1982; Frazier, 1978; Billier, 1974; Cheney, 1974; Wolf, 1974; Ingalls, 1973; Mayer, 1970). It is interesting to note that as early as 1968, the Canadian Dental Hygienists' Association recommended that dental hygienists be employed directly by school boards (CDHA, 1968). That has not occurred to date, although school boards in some provinces currently employ other health professionals such as speech therapists.

As programs within community dental health organizations become more diverse, dental hygienists will become more involved in the management and evaluation of dental health programs. The concept of the dental hygienist as a community dental health program manager is not new (Bowen, 1977; Swanson, Vale, Albertson, 1977), and hygienists have identified program planning, management and evaluation as areas in which they are seeking further training. The process of evaluation of community health programs should always be a program component (Pineault, 1984 and 1976; Donabedian, 1966). Evaluation techniques and principles are becoming better developed and understood, and community dental health programs in future will be subjected to more rigorous evaluation procedures than in the past. Cost-effectiveness will be used as a chief criterion in decisions about modifying or continuing publicly-funded dental service programs. Dental hygienists can play key roles in designing and conducting these evaluations. Other management skills required of dental hygienists as program managers will include needs assessment, program planning, supervision, data collection and analysis skills.

Positions as senior dental health consultants exist in several provinces and with the federal

government (Amer, 1986; Clovis, 1983; Showers, 1983; Gunther, 1982). The numbers of such positions may never be large, but could expand considerably over the present situation. As dental health consultants, these hygienists function as information specialists, health care advocates, educator/trainers, problem solvers and researchers (Kostiw, Stephenson, Zarkowski, 1982). Some of the dental hygienists employed at the provincial level as dental health consultants requested Health and Welfare Canada to convene federal-provincial meetings of community health dental hygienists. Considerable interest has been expressed by dental hygienists in community health to share information and ideas on programs they are developing or operating. They also expressed an interest in working on projects of a national nature such as developing a Canadian parents' guide on dental health. Although this concept of federal-provincial meetings and national projects has yet to be established, a group of dental hygienists in community health at all levels formed the Canadian Society of Community Health Dental Hygienists in April 1984 during the annual scientific session of the Canadian Dental Hygienists' Association. The Society's objectives are to become a section of the Canadian Dental Hygienists' Association when constitutionally possible and to hold annual meetings and scientific sessions focusing on community dental health during the CDHA conventions (Department of National Health and Welfare, Canada, 1984, 1983).

As more questions pertinent to the design, delivery, and evaluation of dental programs are identified, increased opportunities may develop for dental hygienists with research capabilities in community health in the future. Clients could include government agencies, professional associations, educational institutions, and local or field staff (Johnson, 1984; Feller, 1982; Health and Welfare Canada, 1982).

The value of dental hygienists in a variety of capacities in community dental health has been recognized since the introduction of dental hygiene in Canada. The full potential has yet to be realized.

3. Educational Institutions

In 1983, 5.4 per cent of practising Canadian dental hygienists were employed in post-secondary education programs for students in the dental field (Statistics Canada, 1983). This percentage has been relatively constant since the 1960s although the number of educators has increased. Currently, dental hygienists are employed in faculties of dentistry, community colleges, and technical/vocational institutes.

Types of Educational Institutions

There are currently 27 dental hygiene diploma/certificate programs and two baccalaureate programs, two dental therapy programs, 26 CDA accredited dental assisting programs (CDA, 1986) and 10 faculties of dentistry in Canada. There has been a marked increase in the number of teaching positions in the last decade. The number of dental hygiene education programs alone rose from seven to 24 in a five-year period (Chapter IV), with the majority located in Quebec and Ontario. Dental assisting programs have experienced a similar rapid increase. They all constitute potential practice settings for dental hygienists with the necessary skills and qualifications.

Dental Hygiene Programs

Dental hygienists function as academic teachers, clinical teachers and program co-ordinators or directors in dental hygiene education programs. Table 7.4 indicates for 1985 the distribution and highest educational qualification of the dental hygienist-educators in Canada. In total 95 dental hygienists are employed full-time and 113 part-time in dental hygiene programs. Quebec and Ontario, with the largest number of education programs, have the largest number of educator-hygienists.

The level and type of educational qualifications vary greatly among the various programs. However, most dental hygiene educators in Canada have credentials at the baccalaureate level or beyond. The exceptions to this are those dental hygienists who are employed

Table 7.4

Dental Hygienists Employed in Dental Hygiene Education Programs in Canada, by Province, Type of Institution, Full- or Part-Time Employment, and Highest Education Qualification, 1985

Province	Institution	Full-time/ Part-time		Highest Academic Qualification: Dental Hygiene Diploma	Post Diploma Certificate	Baccalaureate Degree	Master's Degree
British Columbia	University of British Columbia	full-time	3	-	-	2	1
		part-time	6	3	-	2	1
Alberta	University of Alberta	full-time	3	-	-	-	3
		part-time	15	7	-	6	2
Saskatchewan	Wascana Institute	full-time	2	1	-	1	-
		part-time	1	1	-	-	-
Manitoba	University of Manitoba	full-time	3	-	-	-	3
		part-time	7	6	-	1	-
Ontario	University of Toronto	full-time	1	-	-	-	1
		part-time	0	-	-	-	-
	9 CAATs*(a)	full-time	30	10	5	12	3
		part-time	56(b)	24	5	25	2
	Canadian Forces Base Borden	full-time	3	3	-	-	-
		part-time	0	-	-	-	-
Quebec	6 CEGEPs**	full-time	42	2	2	35	3
		part-time	14	5	2	4	3
	Université de Montréal	full-time	2	-	-	2	-
		part-time	0	-	-	-	-
Nova Scotia	Dalhousie University	full-time	6	1	-	3	2
		part-time	8	4	-	4	-
	TOTALS	full-time					
		part-time	202	67	14	97	24

(a) Two CAATs programs did not respond.

(b) Qualifications for two part-time faculty not reported.

* CAATs (Colleges of Applied Arts and Technology)
Algonquin College, Cambrian College, Canadore College, Confederation College, Durham College, Fanshawe College, George Brown College, Georgian College, Niagara College, Seneca College, and St. Clair College.

** CEGEPs (Collèges d'enseignement général et professionnel)
CEGEP Edouard-Montpetit, CEGEP François-Xavier Garneau, John Abbott College, CEGEP de Maisonneuve, CEGEP Saint-Hyacinthe, and CEGEP Trois-Rivières.

Source: Survey of Dental Hygiene Education Programs, 1985, Working Group on the Practice of Dental Hygiene.

full-time in the Colleges of Applied Arts and Technology in Ontario, where only one-half have baccalaureate or master's degrees. Of dental hygienists who teach part-time in dental hygiene education programs, approximately half have a baccalaureate or master's degree.

Respondents in all provinces indicated current studies towards a degree or additional degrees (Johnson, 1982).

Dental Therapy and Dental Assisting Programs

Dental hygienists are employed as educators in the Saskatchewan dental therapist program, in the dental technology and denture therapy programs at George Brown College in Ontario and in the dental technology program at Vancouver Vocational Institute in British Columbia. In addition, the majority of dental assisting programs throughout Canada employ dental hygienists on their teaching faculties. Ontario, with its seventeen programs for dental assistants, offers the most positions. As well, dental hygienist educators with expertise in areas such as communication, nutrition and preventive dentistry teach in programs for other health care professionals. For example, faculty at Dalhousie University, University of Manitoba, Seneca College and George Brown College are utilized in non-dental programs as lecturers.

Dental Programs

Dental hygienists serve in a variety of capacities within dental education programs. In some cases, the dental hygienist may have cross-appointments with a university-based dental hygiene program. In other cases, the dental hygienist is appointed solely to the dental faculty and may hold a full or associate professorship. More frequently they function at the tutorial and clinical demonstrator level. Their major area of activity is in the field of preventive dentistry including nutrition, periodontics, and social/community dentistry.

Future Opportunities in Education

The effect of a perceived dental human resource crisis of the 1980s on dental hygienist employment in education is unpredictable. In Ontario, for example, the dental and dental hygiene professional associations along with the Royal College of Dental Surgeons, in 1981 recommended a 50 per cent reduction in enrolment in dental hygiene education programs and a 25 per cent reduction in dental student enrolment (ODHA, 1981; RCDS, 1981). However by 1985 this recommendation was under review by the dental hygienists' organization (ODHA, 1985) and by the dental profession in 1986.

It is likely that employment opportunities for dental hygienists in educational settings will remain relatively constant in the foreseeable future. These positions will continue to be attractive because of favourable salaries, benefits, and career structure (Lewis 1982).

4. The Canadian Forces Dental Services

The role of the dental hygienist in the Canadian Forces is to support the Dental Care Program in an instructional, educational and clinical capacity. Since all military personnel are recalled annually for preventive instruction and treatment, the dental hygienist has a very important position on the dental team (McQueen, 1985).

As of February 1985, there were 69 positions for dental hygienists in the Canadian Forces (McQueen, 1985) - an increased number over the pre-1980 period. These positions are located at most dental detachments across Canada and at the two Canadian bases in Germany in Europe. Table 7.5 lists the possible practice sites in Canada. In addition to these positions for dental hygienists who are military personnel, some positions are also available for civilian dental hygienists. In February, 1985 there were approximately six civilian dental hygienists employed in the armed forces with another nine to twelve expected to be recruited during the period 1984-85 (McQueen, 1985). Following this recruitment campaign, all available civilian positions were expected to be filled. Together with the placement of the military dental hygienists expected to graduate in the spring of 1985 from the Camp Borden

Table 7.5
Locations in Canada Where Dental Hygienists in the Canadian Forces Dental Services Practise, 1985

Province	Location
Prince Edward Island	Summerside
Nova Scotia	Halifax, Shearwater, Cornwallis
New Brunswick	Chatham, Gagetown
Quebec	Montréal, St-Jean, Valcartier
	Bagotville
Ontario	North Bay, Petawawa, Borden, Toronto, Ottawa, Trenton, Kingston
Manitoba	Shilo, Winnipeg
Saskatchewan	Moose Jaw
Alberta	Edmonton, Cold Lake, Calgary
British Columbia	Esquimalt, Chilliwack, Comox

Source: Canadian Forces Dental Services

training program, it was anticipated that all the Canadian Forces positions would be filled. No increase in positions was anticipated in the near future (McQueen, 1985).

The range of functions undertaken by dental hygienists working in the military setting include oral hygiene instruction, dental prophylaxis, intra- and extra-oral radiographic procedures and processing, nutritional counselling, associated clerical duties and related equipment maintenance. Supervision by a licensed dental officer in the same clinical location is required (Thompson, 1982).

The Canadian Forces Dental Services School, located at C.F.B. Borden, Ontario, has been in operation since 1957* (Donely, 1982). Dental hygienists are selected from the Dental Services across Canada and Europe to serve as instructors at the school. A total of 95 basic level and 31 expanded-duty dental hygienists had graduated from this program by 1982 (Johnson, 1982).

As of 1986 there were fifteen dental hygiene positions designated for individuals trained to perform expanded restorative functions similar to the Ontario expanded-duty program (McQueen, 1986). Candidates for this training are selected from experienced military dental hygienists. Once qualified, they are termed dental therapists and usually are employed at bases where there is a significant demand for operative dentistry.

In recent years the Canadian Forces Dental Services have offered an increasing number of positions for dental hygienists who wish to join the military and are prepared to relocate if necessary.

5. Research

Early involvement of Canadian dental hygienists in research is not well documented, but examples of research activities dating from the late 1960s can be found in the literature. Research projects ranged from laboratory research to evaluation of public health programs (Gray, Gunther and Jordan, 1970). As early as 1967, a Canadian dental hygienist presented (as principal investigator) a paper at the

* Originally called the Royal Canadian Dental Corps School, it was first located in Ottawa from 1947 to 1957.

International Association of Dental Research (Pollard, Bergman and Kasloff, 1967). During the 1970s there was a considerable increase in dental hygienist involvement in research, largely as project directors, clinical examiners, and research assistants, but also as primary or co-investigators. Research activities were usually located within university settings or in public health programs. In addition, some dental hygienists were involved in research projects related to their studies at the master's or doctoral level.

Because little was known about research as an activity of Canadian dental hygienists, the working group conducted a research participation survey in the spring of 1982. It confirmed that most research by dental hygienists was being done as a part-time activity in conjunction with other responsibilities in university-based dental hygiene programs, faculties of dentistry, hospitals, or community health settings. Manitoba and Quebec were the provinces reporting the most research activity by dental hygienists. The survey also indicated that dental hygienist participation in research was undergoing a rapid increase (Fréchette, 1982).

The Working Group on the Practice of Dental Hygiene established a Sub-committee on Research in early 1982. The major activity of the Sub-committee on Research was to co-sponsor in the fall of 1982 on behalf of the Working Group on the Practice of Dental Hygiene, and with the University of Manitoba, School of Dental Hygiene, the first conference on dental hygiene research ever to be held.

The overall goal of the conference was to encourage participation of Canadian dental hygienists in research. Specifically, by the end of the two-day conference, each participant would:

1. have identified and discussed several research areas of interest;
2. have defined two specific research questions in at least one of these areas, in consultation with one or more conference leaders;
3. be able to identify appropriate funding sources; and
4. have the names of potential research collaborators.

Fourteen distinguished researchers and consultants from across Canada and the United States served as conference leaders. Forty-two hygienists, from educational, public health, hospital, and private practice settings, registered as participants. The conference format was designed to facilitate small group discussion and individual consultation with leaders, as well as to provide presentation of papers to the entire group.

By any measure, the conference was judged to be a great success. In particular, the interest it created in increased participation in research by Canadian dental hygienists, and the establishment of networks among hygienists and leaders with similar research interests may prove to be outstanding contributions to the development of dental hygiene in Canada.

Proceedings for the conference have been published and are available from the School of Dental Hygiene, University of Manitoba, and the Health Services Directorate, Department of National Health and Welfare, Canada.

Interest of dental hygienists in research is not a purely Canadian phenomenon. At the June 1982 American Dental Hygienists' Association Board of Directors meeting, a special session for the presentation of research papers was scheduled, and in July 1984 the ADHA held a research conference entitled "National Agenda on Dental Hygiene Research".

The Canadian conference appears to have provided an impetus for dental hygienists in research. In particular, it was instrumental in establishing networks between dental hygienists and others with like research interests. Follow-up surveys were conducted in the fall of 1983 and 1984 to ascertain research-related activity of conference participants in the previous year. Both surveys indicate a continuing high level of activity (Forgay 1985, 1983).

The number of dental hygienists involved primarily in research will probably remain a small fraction of the work force. However, there has been a clear trend in recent years for increases in the numbers of dental hygienists pursuing research-oriented graduate degrees, making successful applications for research grants, and presenting and publishing research findings. The proposed establishment of a research training scholarship by the Canadian Dental Hygienists' Association is an indication of the importance attached to research by that organization.

Some of the research topics that have been identified as being of interest to dental hygienists include: developing a model for forecasting dental hygiene human resource needs; implications of various dental hygiene practice characteristics for quality of care, and efficiency and effectiveness of dental health care; consumer and provider satisfaction; determinants of patterns of services provided by dental hygienists; prevention of periodontal diseases at the community level; epidemiology of dental diseases, including the identification of high risk groups; clinical teaching and evaluation methods; predictions of future dental hygiene performance; utilization of dental hygienists in various practice settings; determinants of preventive dental health behaviour; effectiveness of continuing education for dental hygienists; effect of fluorides on root surfaces; testing the effectiveness of health promotion programs; and patient compliance.

The future impact of research as an important area of dental hygiene practice will probably be considerable. It will provide satisfying career opportunities and contribute to the emerging professional status of dental hygiene (Stamm, 1982). More important, it holds the promise of adding to the store of knowledge on a wide range of issues and, in time, of enhancing the level of oral health of Canadians.

6. The Dental Industry

A survey of fifty-six manufacturers, dealers and distributors in the dental industry was conducted in the fall of 1981 to determine employment opportunities for dental hygienists (Johnson, 1982). Of the twenty-eight respondents, only three indicated that they currently employed a dental hygienist. Two stated that dental hygienists were employed by their American parent companies. Another two indicated that they had employed dental hygienists as sales representatives in the past and would do so again. One of these companies, which had employed a dental hygienist in Montreal, had, at that time, a "dental nurse" on staff in Edmonton as a sales representative.

At the present time, there are relatively few positions for dental hygienists in the dental industry. However, interest has been expressed. Enterprising hygienists have approached manufacturers and suppliers outlining how they could function effectively within the particular company. A large manufacturer of dental health consumer products for dental care is currently developing a position for a consultant-dental hygienist (Johnson, 1982). Those who seek positions as consultants and managers will require specific skills and experience. For example, expertise in marketing and economics was specified for a position available as a product manager (Johnson, 1982).

The opening of employment opportunities in dental industry is a phenomenon evident in the United States as well as in Canada (Noonan, 1984; Stein, 1984). More dental hygienists may seek out positions within the dental industry when successful colleagues become more visible.

7. Industry and Union Dental Clinics

Dental health clinics established by unions and corporations exist in a number of countries. Dental hygienists are employed to provide dental hygiene care, usually as part of a dental team. For example, the Marks and Spencer Company, an international retail firm based in London, England, provides an extensive three-part dental health service program to employees in Britain, Eire, Belgium and France (Barnaby, 1982). Similar corporation-run "workplace" clinics exist in the United States. There are none yet in Canada.

Some unions have established clinics where members can obtain dental health services from staff personnel. The only known union clinics in Canada are located in Ontario. The oldest of these is the United Auto Workers (U.A.W.) clinic in Oshawa where there is usually at least one dental hygienist on staff. Another large community health centre was developed by the Steel Workers Union in Sault Ste. Marie. It functions as a Health Service Organization, the Ontario equivalent of a Health Maintenance Organization. Five dentists, functioning as a group practice within this clinic, employ at least one dental hygienist full-time. A third union clinic, located in central Toronto, is run by Local 183 of the Labourers' Union. Generally, there are four full-time dentists on staff, plus a part-time coordinator-dentist and a part-time dental hygienist. There have been no further union clinics proposed in Ontario (ODA, 1981).

It is anticipated that there will be a slow growth of workplace settings for dental hygiene practice, and that the numbers employed in such settings will remain small.

8. Private Dental Hygiene Practice: Practice Alternatives

A new and controversial issue in clinical dental hygiene practice is the concept of alternative private dental hygiene practice arrangements. Terms new to dental hygiene practice have been introduced: independent contractor dental hygienist; independent practitioner; dentist-affiliated practitioner; self-employed dental hygienist; sole proprietor and solo practitioner. These terms are not all interchangeable. The major terms are defined and elaborated below and Table 7.6 provides a comparison of the four most frequently discussed "new" dental hygiene practice arrangements. These types of practice (with the exception of the "self-employed" dental hygienist), are not as yet evident in Canada, but the increase in their numbers in the United States has been a major item of discussion both within and between organized dentistry and dental hygiene (Kuperburg et al, 1981; Schwager, 1981; ADHA, 1983b). Other interested groups include government and consumer organizations (Economic Council of Canada, 1981; Kviz, 1985). For example, the U.S. Federal Trade Commission specifically addressed the topic of independent dental hygiene practice in its investigation of the "dental industry" (U.S. Federal Trade Commission 1980). Increased interest and concern on the part of the Canadian dental profession in the early 1980s led to the development of a set of definitions by the Canadian Dental Hygienists' Association (see Appendix G) in an effort to establish more rational consideration of the issue in the Canadian context.

The Self-Employed Dental Hygienist

A "pseudo" independent contractor, the self-employed dental hygienist is one who is permitted by appropriate dental or dental hygiene legislation and by federal income tax authorities to classify herself/himself as self-employed rather than as an employee. This is essentially a financial rather than a practice-type arrangement, and it may be of benefit to both the employer and the employee. The dentist avoids certain taxes and employee benefit payments such as Canada Pension Plan contributions. The dental hygienist benefits from those tax deductions allowed the self-employed worker. In this arrangement, dental hygienists do not rent office space, set or collect fees in their own names, establish working hours, or pay for all instruments and supplies using their own line of credit.

Dental hygienists considering this arrangement should analyze the economic aspects carefully (Hunnicutt, 1979, Cottrelle, 1981). Factors to consider when contemplating the use of this financial arrangement include: written contracts; malpractice and liability insurance coverage for the dental hygienist; methods of remuneration (e.g. salary and commission); and expenses such as Canada Pension Plan contributions and accounting services.

The Independent Contractor Dental Hygienist

The independent contractor dental hygienist is defined as one who delivers dental hygiene services on a contractual basis under the

Table 7.6
Alternative Private Practice Arrangements for Dental Hygienists

Characterics	"Self-Employed" Dental Hygienist	Independent Contractor Dental Hygienist	Dentist-Affiliated Sole Proprietor	Independent Practitioner Dental Hygienist
A. Ownership	Practises within the supervising dentist's office facility.	Practises within the supervising dentist's office facility, leasing the operatory.	Owns and maintains a separate office facility, but has a contract with a sponsoring dentist.	Owns and maintains a separate office facility. No contractual agreement with supervising or sponsoring dentist.
B. Business responsibility	Assumes personal but no business responsibility.	Assumes all financial and management responsibility for own practice including equipment, rent, employees - e.g. owns the dental hygiene practice.	Assumes all financial and management responsibility for own practice including equipment, rent, employees - e.g. owns the dental hygiene practice.	Assumes all financial and management responsibility for own practice including equipment, rent, employees - e.g. owns the dental hygiene practice.
C. Employment status	Self-employed - pays 100% of all government payroll deductions and claims self-employed, work-related deductions.	Self-employed - pays 100% of all government payroll deductions and claims self-employed, work-related deductions.	Self-employed - pays 100% of all government payroll deductions and claims self-employed, work-related deductions.	Self-employed - pays 100% of all government payroll deductions and claims self-employed, work-related deductions.
D. Supervision requirements	Meets all requirements for general supervision - dentist need not be present. Meets requirements for direct supervision - dentist is on premises.	Meets all requirements for general supervision - dentist need not be present. Meets requirements for direct supervision - dentist is on premises.	Meets all requirements for general supervision - dentist need not be present. Does not function under direct supervision.	Does not function under dental supervision - general or direct.
E. Bills patient directly	No	Yes	Yes	Yes
F. Patient source	Supervising dentist only.	Supervising or any contracted dentist.	Usually contracted dentists by prescription only.	Referral by dentist may occur but not required; direct public access permitted.
G. Ultimate responsibility for patient care	Does not assume ultimate responsibility for patient care - supervising dentist does.	Does not assume ultimate responsibility for patient care - supervising dentist does.	No--referring dentist does.	Yes - assumes ultimate legal responsibility for patient care.
H. Legal status	Legal in some of USA and Canada.	Legal in jurisdictions permitting general supervision.	Legal in some US States but illegal in Canada	Illegal in North America except for Colorado, U.S.A.
I. Prevalence	Very few documented cases. Examples in British Columbia, Alberta and Ontario are reported.	Started in California and now exists in those states which permit general supervision - e.g. New Jersey, Oregon, Colorado, New York. None exist in Canada	Most reported practices are located in Colorado- e.g. J.A. Grant of Associates in Dental Hygiene. None exist in Canada	Test cases reported: Susan Edwards, Pennsylvania; Alice De Lancey, South Carolina. None exist in Canada

direction of a dentist. Under this arrangement the dental hygienist assumes all the risks and advantages associated with owning a business including, for example, rental or ownership of office space, operating and overhead expenses, establishment of both working hours and a fee schedule, and collection of accounts (Bean, Gentry and Bernd, 1981). In some instances the dental hygienist-contractor leases needed spaceand equipment from a dentist (Hunnicutt, 1979). Under another type of arrangement, the dental hygienist functions as a sole proprietor in a separate suite of offices, often adjacent to that of the dentist who owns the business and equipment (Bean, Gentry and Bernd, 1981; Dreyer, 1984; Krol, 1980).

Independent contracting of services for dental hygienists is feasible, without the need to change legislation, wherever general supervision requirements exist. General supervision does not require the physical presence of a supervising dentist within the actual premises in which the dental hygienist practices: the dentist is expected to be cognizant of the services being provided to each client. Although rare in Canada, the independent contractor is becoming more prevalent in the United States. British Columbia is the only province with legislation that provides for general supervision. In 1986 over 40 American states had legislation which permitted independent contracting by dental hygienists.

An extension of the independent contractor concept is the dentist-affiliated dental hygiene practitioner (Krol, 1981). Requirements for general supervision are met either by limiting clients to those referred on a prescription basis by affiliated dentists or by contracting with a specific dentist for provision of diagnostic general supervisory, consultative and emergency services. Under this arrangement, the dental hygiene practice may include patients in addition to those of the "sponsoring" dentist, for example, clients referred by prescribing dentists, and other health and social service workers and through client self-referral. There are no reports of dentist-affiliated dental hygiene practices in Canada at this time.

Reviews of these non-traditional practice arrangements reveal that information is anecdotal and opinion is mixed (Johnson, 1982). It has been suggested that dental hygienist-contractors theoretically benefit both patients and dentists as well as themselves (Dunning, 1976). They function in a case-finding and practice--building capacity, identifying and referring to dentists those patients who require dental services. If the technical efficiency and potentially lower cost associated with having selected services provided by dental hygienists rather than dentists is reflected in the fee paid for these services, then dental health services will become more accessible. On the other hand, opponents suggest that fragmentation in the delivery of services may jeopardize the quality and comprehensiveness of care (Dunning, 1976).

A number of personal benefits have been reported by independent contractor dental hygienists. These include a greater sense of service and career satisfaction; an enhanced opportunity to practice to their own standard of care; financial independence; elimination of financial "peak-out" early in a career; equity in their own equipment and practice; a sense of control of one's destiny and the reduction of professional burnout (Hunnicutt, 1979; Krol 1980 and 1981; Woodall and Bentley, 1981; Kuperberg et al, 1981; Levin 1980; Dreyer, 1984). Coupled with these benefits are increased liability, financial risks, and a broader range of administrative problems (Dreyer, 1984; Woodall, Bentley, 1981). An increase in the prevalence of independent contracting arrangements in Canada will be dependent not only on legislative amendments and on changing attitudes of dentists, but on career aspirations and attributes of individual dental hygienists.

The Independent Practitioner Dental Hygienist

The independent practitioner dental hygienist owns his/her own business and operates without the supervision of an employing, affiliated or sponsoring dentist. Services are provided directly to the public. Proponents suggest that independent practice will enhance provision of

lower-cost preventive services to currently underserved populations, such as the elderly, homebound and institutionalized. The premise is that dental hygienists could structure their practices to increase access to these groups.

Currently, independent practice by dental hygienists is illegal in jurisdictions in North America except in the state of Colorado. However, existing legislation in the United States has been challenged at the state level, for example, by Washington and Colorado (ADHA, 1987; Edstrom Tussing, 1986; ADA, 1986; Bartelson, 1986) and at the federal level by the Federal Trade Commission (1980). Amendments to state dental practice acts have been sought in California, Colorado and Washington to permit independent dental hygiene practice (ADA 1985, 1981b). Should independent dental hygiene practice become a legal reality in other jurisdictions, it is not expected to result in the demise of the traditional dental hygiene practice model. The U.S. Federal Trade Commission, in its report on the dental hygienist practitioner concept, noted:

> Dental hygiene practice in association with dentists would undoubtedly continue, especially where it was the business arrangement that made the best economic sense (U.S. Federal Trade Commission, 1980).

In summary, although independent practitioners and contractors have become an accepted part of nursing, physiotherapy, nutrition and social work practice, the concept is new to the dental health team and has generated considerable controversy. Misconceptions that exist concerning the differences between independent contracting, independent practice and self-regulation together with the erroneous assumption that general supervision equates with independent practice have contributed to this controversy.

The issue of independent practice for dental hygienists does not have a high profile in Canada at this time. Neither the Canadian nor American dental hygiene professional associations have developed a policy statement with respect to independent practice. The Canadian Dental Hygienists' Association has indicated that the issue requires further research and study before a policy can be established (CDHA, 1985). While developments in the United States will be watched with interest, the political climate is such that the prospect for independent practice appears limited (Born, 1983).

The other alternatives to independent practice such as hospital-based practice and contractual arrangements discussed earlier in this chapter appear to be more viable. They retain the integration of dental hygiene and dental service delivery while at the same time providing more flexibility and autonomy in dental hygiene practice - features of interest to practitioners. The American Dental Hygienists' Association, in a 1983 survey of dental hygienists, found that 58 per cent of respondents indicated a preference for practice options other than their present one which, in most instances, was employment in private dental practice. The preferred options were independent contracting (30%); independent practice (18%); and field practice (10%), for example, nursing homes and institutions under general or minimal dental supervision (ADHA, 1983a).

9. Conclusions

Private dental practice is and will continue to be the major practice setting in Canada for dental hygienists. Configurations and locations of private dental practices will continue to undergo change, with more group practices and more innovative marketing approaches to the delivery of dental health care in the private sector. It would appear that the private sector is a potential area of growth, given that only one in three Canadian dentists employ a dental hygienist. Human resource projections which indicated a possible surplus of dental hygienists have not been verified (see Chapter 3). In fact, employment opportunities in the private sector theoretically should increase, given the existing need for preventive services (Health and Welfare, 1979), increased dental insurance programs and increasing awareness of consumers concerning preventive maintenance services.

Dental hygienists on the whole feel that their basic dental hygiene education is good prepara-

tion for work in general private practice settings. However, approximately half of those dental hygienists working in community health and specialist practices, reported that they felt their basic dental hygiene education did not provide adequate preparation (Lewis, 1982). If the purpose of dental hygiene educational programs is to prepare dental hygienists for specialist and community health settings, as well as for general dental practice, this finding merits further investigation.

Dental hygiene practice in the private sector is influenced by dentists' perceptions of dental hygiene. Therefore dental hygienists should promote their ability to add new dimensions to preventive service and to client education. Effective use of the expertise of dental hygienists to plan, conduct and evaluate preventive services will benefit dentists, dental hygienists, and potential clients. To this end, it is the responsibility of each practising dental hygienist to maintain a current state of knowledge about preventive dental health research and practice, and to incorporate these concepts and techniques into their clinical practice. To do so may entail acting as change agents within the dental practice. Dental hygienists may need to develop appropriate skills to achieve these practice changes.

Community health opportunities for dental hygiene practice likely will expand numerically and possibly as a proportion of total dental hygiene employment. Opportunities for dental hygienists within institutional settings will expand when appropriate regulatory requirements are instituted. The likelihood of more dental hygienists working in a wider variety of community settings will improve access to screening and preventive services, and may generate increased demand for dental service in the private sector.

Dental hygienists in all practice settings ideally will work together with their employers to continually monitor, evaluate, and improve the dental health services they currently provide. Research findings, practice management information, development of new preventive techniques, implementation of practice standards, characteristics of the client group, and experiences within individual settings all have the potential to influence this continuing process of practice evaluation and modification.

The development of clinical practice standards for dental hygiene, Part Two of this Report, should be of direct benefit in any clinical practice setting. They can serve as a resource for discussion whereby dental hygienists, dentists and other related personnel collaborate to improve and maintain the quality of dental hygiene care in a particular setting.

Educational institutions as a practice setting will continue to provide approximately the same number of positions as at present since the period of rapid expansion of educational programs for dental health service providers has stabilized. Incumbents of teaching positions will have increasing levels of formal education. The nature of the work, the defined career structure and associated status, and the attractive salary and employment benefits, will continue to make this a practice setting attractive to many dental hygienists.

Although non-traditional practice settings (that is, those apart from private practice, community health, and educational institutions) gradually will become more commonplace, the majority of dental hygienists will continue to work in traditional settings to increase their problem-solving responsibilities, enabling them to provide improved levels of service (Darby, 1981; Muchmore, 1979). Even within the context of alternative practice arrangements, most dental hygienists prefer to work closely with dentists and see themselves as part of the dental health team. While maintaining an integrated model of service delivery, they nevertheless desire more opportunities to provide preventive services, including, for example, different configurations of personnel and responsibilities. It is generally accepted that the public interest will be better served by a more collaborative approach.

Fundamental to this discussion is the fact that, at present, many Canadians do not have access to adequate dental health care. If, as many dental health personnel contend, dental health care is an essential health service, one approach to improving oral health that must be

considered is a greater mix of providers and delivery systems (Dunning, 1983). Existing models of alternative dental hygiene practice in the United States should be monitored. In Canada, there is a need for interested groups to encourage research such as demonstration projects to investigate new models designed to improve dental health services.

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VIII

INFLUENCING FACTORS

A wide variety of factors influence the role of dental hygiene in providing health services to Canadians. Factors dealt with in this section include demography, changing patterns of dental disease, economics, public policy and legislation, relationship with other health professions, socialization, growing professionalism, professional satisfaction, research, practice standards, competency assurance and quality assurance in dental hygiene, and world-wide developments.

1. Demography

The need for dental hygiene services is closely linked to demography. After 1941 Canada's population growth accelerated rapidly due to the addition of Newfoundland and a surge in birth rates and immigration in the post-war years. In the census period 1951-1961, the growth was a phenomenal 30.2 per cent. Since then, annual population growth rates have shown a steady decline: 2.8 per cent in 1956 to 1.3 per cent in 1976. Because of declining fertility rates, projections for future population growth show further decreases: from 1.4 per cent in 1981 to 0.5 per cent in the year 2026 (Statistics Canada, 1981a).

In Canada, as in many industrialized countries, the most startling present demographic shift is that to a more elderly population. In 1976 the proportion of Canada's population over the age of 65 was 8.7 per cent; in 1981 the figure had risen to 9.4 per cent; by the year 2001, 11-12 per cent of Canadians will fall in this age group; by the year 2026, the projected figure is 16 per cent (Statistics Canada, 1981a).

High birth rates in the years following World War II were reflected in priorities for dental public health programs, with emphasis being placed on maternal and child dental health, as well as on primary prevention of dental caries through promotion of community water fluoridation. The shift to a more elderly population is already resulting in a change of emphasis in community health programs, with more attention being paid to the dental health needs of the elderly. This trend will certainly continue for several decades.

Demand for dental health care has long been linked with, among other factors, lifestyle and level of education. The general level of education in Canada is increasing (Statistics Canada, 1984). In the future, the elderly in Canada will not only form a larger proportion of the population, but they will be better educated than the elderly of today. This fact should further increase demand for dental services by seniors, who at present have a low utilization of dental services in comparison with the general population: in 1978-79, 77.3 per cent of Canadians 65 and over did not consult a dentist; the rate for all Canadians was fifty per cent (Statistics Canada, 1981b). There are some aspects of the present organization of dental care services which mitigate against seniors receiving needed care. Notable among them are the cost of dental health care and access to services (Province of Manitoba, 1984).

Many dental health needs of the elderly fall within the parameters of dental hygiene care (Mitchell and Forgay, 1987; Marinelli, 1983; Razzoog et al, 1983; Heine et al(2), 1983). These include treatment and prevention of periodontal disease, prevention of root surface caries and adequate care of dentures. More research is needed to determine appropriate prevention and early interventions for some of these problems such as root caries.

Dental and dental hygiene education programs have only recently responded to the increasing numbers of elderly who will need and demand dental services, by increasing related didactic and clinical content in the curriculum. Most dental hygiene curricula still require improvement in this area. Since gerontology represents a new area of curriculum development in most educational programs, it represents both an opportunity and a need for coordination of teaching of dental, dental hygiene and other health-related students (ACFD, 1983; Rakowski

et al, 1984; Carlin et al, 1984). Also, there is a need for continuing education programs in this field.

2. Changing Patterns of Dental Disease

It is well documented that the patterns of oral disease are in a period of transition. The world-wide evidence of a declining dental caries rate in industrialized countries (Jenkins, 1984) is clear. Data from nine countries indicate reductions in dental caries of more than 50 per cent in some groups of school children (Glass, 1982). Although data for Canada are few, especially on a national level, there is recognition that a significant reduction in dental caries is occurring in this country (CDA, 1980; Province of Ontario, 1983). Data from United States showing declining caries rates (U.S. Health and Human Services, 1979-1980) are more extensive and may well fit the southern Canadian population. There is some indication that caries rates among Canada's Inuit and Indian populations remain high (University of Manitoba, 1984). In this respect, caries experience in northern Canada may resemble the experience in developing countries more than industrialized nations.

Periodontal disease, unlike dental caries, continues to have a ubiquitous, high prevalence and is rapidly becoming the new priority in the public and private sectors (ADA, 1982; AAPHD, 1983; Burt, 1982; Cowley, 1981; Rozier et al, 1983; Wei, 1982). The Sub-committee on Preventive Periodontics of the American Association of Public Health Dentists prepared a position paper with a summary of the periodontal disease literature, current and potential providers of preventive and therapeutic care for periodontal disease, strategies for a national program, and recommendations including the establishment of a special task force to study the feasibility of establishing a National Periodontal Disease Program similar to the existing National Caries Program (AAPHD, 1983).

The mean periodontal index scores of those examined in the U.S. National Health Surveys of 1960-62 and 1972-74 remained unchanged. Closer examination of the data reveals that those classified as having no evidence of periodontal disease increased, and those with gingivitis decreased. However, older adults showed a slight increase in more severe signs of periodontal disease. This trend may continue because edentulism is declining and the population as a whole is aging (Mitchell and Forgay, 1987; Douglass et al, 1983).

The changing epidemiology of dental diseases has implications for increasing the roles of dental hygienists, not only in the provision of appropriate clinical and educational services, but in community and national dental health promotion and advocacy of passive preventive measures such as community water fluoridation. There is widespread support in the dental public health literature for this concept as exemplified in the following quotations:

> "Today, hygienists are equipped to spread a knowledge of prevention and to screen such population groups as school children and the elderly in nursing homes. They should be allowed to do so," (Dunning, 1982).

> "..... it is logical to regard the dental hygienist as the primary preventive therapist in periodontics," (AAPHD, 1983).

> "Dental hygienists can assume active roles in the prevention, detection, and treatment of periodontal disease... Greater numbers of well-trained periodontal co-therapists can help public health and private dentists cope with the overwhelming periodontal treatment needs, as we move into the periodontal thrust of the 80's," (Catherman, 1983).

> "Periodontal and endodontic treatment, and other methods applicable to natural teeth will be more needed than ever... In educating the adults of tomorrow to demand these services from dentists, the semi-independent auxiliaries can do (and elsewhere have done) effective work", (Dunning, 1982).

3. Economics

Canadian Expenditures for Dental Health Services

Health and Welfare Canada reports that the cost of dental services accounted for 5.1 per cent of the total Canadian private and public expenditures related to health services in 1960 and 5.8 per cent in 1979. During this period, dental care expenses were largely assumed by the private sector. Expenditures in this regard rose from $12.00 per person in 1970 to $26.00 in 1975, an increase of 110 per cent (Health and Welfare Canada, 1984).

A study (Smith, 1982) of out-of-pocket expenditures of urban families on direct health expenditures revealed that direct payments to dentists tripled from 1964 to 1978. As a percentage of total out-of-pocket health expenditures by family, they rose from 16.3 per cent to 30.3 per cent. Dental expenditures per family rise with family income, ranging from an average of $31.50 per family with an income of $6,000 and less to an average of $233.50 per family with an income of $35,000 and over. These data cannot be generalized to non-urban families since the inhabitants of urban areas generally have greater access to the services of dentists than residents of rural areas (Health and Welfare Canada, 1977; Stamm et al, 1980). However, studies dealing with income and demand for dental services consistently show a positive correlation between the two. Another correlate of demand for dental care is level of education. As a rule, a low level of education is associated with less frequent use of dental health services even when the cost barrier is removed. Increased provision of dental health services by dental hygienists and other non-dentist providers would reduce costs of dental care, enabling a clientele that does not want to or cannot purchase more elaborate services to have access to many quality services at lower cost (Sheffman and Appelbaum, 1982).

Dental Insurance

Most people suffer at one time or another from dental health problems that can be treated. Consequently, dental insurance differs from other types of insurance such as hospital or life insurance, which are based on the occurrence of unforeseeable events - as far as the individual is concerned, at a particular rate in a given population. Dental insurance is, in fact, a prepaid budget plan, the premiums for which are based on actuarial forecasts of the use of dental services by the insured group (Bailit et al, 1979). In Canada in 1981, 36 per cent of the population had some form of dental insurance (Stamm et al, 1986). When point-of-service expenditures for dental services are reduced through insurance, the number of persons visiting dentists increases slightly. Nevertheless, the greatest impact of dental insurance is on the change in the volume and type of services received by those who were previously regular users of dental services. According to Bailit et al, (1979), there is a significant shift toward more-costly dental services such as crowns and bridges. Utilization rates continue to show a relationship to family income and level of education.

Many types of treatment may be included in a dental insurance plan. Some are recognized as having a major impact on the level of health and are applicable to a majority of the beneficiaries (for example, topical applications of fluoride). Other types of treatment are more costly and apply only to a minority (for example, complex restorative dentistry).

In order to control the costs entailed in a private dental insurance program (to keep premiums down and maintain a competitive position in the market), two general alternatives are available to planners: eliminate the most expensive treatment from coverage and use the funds concerned to reduce general program costs, or increase the use of proven preventive dental health services (Bailit et al, 1979). The latter option has considerable implications for dental hygiene. Increased provision of preventive services using dental hygienists as providers would have a two-fold effect on cost reduction: reducing the amount of dental disease which occurs, and also doing so at significantly less cost than if the services were provided by dentists. A third method of controlling the cost of insured dental services is capitation (Bailit et al, 1979). Capitation is

a system by which a contracting dentist is compensated at a fixed per capita rate in return for providing specific, predetermined dental services as appropriate and necessary to those eligible. In theory, this system should increase the provision of preventive services and less expensive restorative services (Bailit et al, 1979). Under a capitation system there are not only the obvious incentives to reduce the incidence of dental disease through emphasis on preventive dental health services, but also to have as many dental health services as feasible provided by non-dentist dental health personnel. Thus, any growth in capitation financing of dental insurance programs holds the potential of increasing the provision of dental health care by dental hygienists.

Tax-Supported Dental Care Plans

The federal government provides dental care for certain population groups in Canada: members of the Canadian Armed Forces, those in federal correctional facilities, members of the Royal Canadian Mounted Police, some former members of the Armed Forces, Indians and Inuit. In addition it provides medical insurance funding to the provinces for certain dental procedures performed in hospitals and, through the Canada Assistance Plan, assists the provinces in funding dental care for social assistance recipients. In 1982-83, federal expenditures for dental care approximated $60 million (Stamm et al, 1986).

Provinces have initiated tax-supported dental care programs for certain target groups, such as social assistance recipients, children of specified ages, physically and mentally handicapped children, children with cleft lips and/or palates. Alberta and the Yukon provide basic dental services to adults over 65 years of age through extended health benefits programs. A majority of provincially-funded programs utilize a third-party payment approach, with services provided in private dental offices. Direct delivery systems utilizing salaried personnel are less common but exist in some municipal dental clinics and health regions (for preventive services). In Prince Edward Island, Saskatchewan, and to a limited degree in Manitoba, services have been provided in school-based, children's dental clinics (Stamm et al, 1985). Evans and Williamson (1978) have noted that a high proportion of services currently provided by dentists can be provided by dental health personnel other than dentists but that there is no incentive to increase provision of services by these personnel when publicly-funded dental care programs operate on a fee-for-service basis with private dental practitioners. They have proposed that the most effective benefits from tax-supported dental care programs would be obtained by providing programs for specific target groups and simultaneously implementing programs to change the pattern of delivery of dental care, thus influencing the supply side of dental health care at the same time as demand is increased. Control of delivery capacity is a powerful strategy to control costs in a public dental care program.

Although tax-supported programs generally result in higher participation rates, they also illustrate the existence of factors other than out-of-pocket costs in determining demand for dental health services. For example, in May 1974, the province of Quebec initiated a program of dental health care for children in which children of specific ages could receive a wide range of dental services at no direct cost. A 1977 study showed participation rates varying from 61 per cent for five-year-olds to 67.6 per cent for seven-year-olds. However, significant differences arose in the participation rates by social class. The level of program use by the disadvantaged children was lower than those considered to be advantaged (Pronovost and Melanson-Ouellet, 1981). While the introduction of the free dental care plan generally improved the use of dental health services by children, it did not change the disparities in utilization that existed between the various social levels. In contrast, participation in Saskatchewan in 1977 (three years after that province began its children's dental program) was 83.4 per cent for children of comparable ages (Millions, 1984). The difference in utilization rates between Quebec and Saskatchewan is due at least in part to the fact that the dental services in Saskatchewan have been provided in school-based clinics, while in Quebec in 1977 all insured services were provided in private dental offices. In addition

to being less convenient for the parent and child, treatment in other than school-based facilities involves indirect costs such as a parent missing several hours of work, babysitters for siblings and transportation costs.

Economic Impact of Regulating Dental Health Personnel Other Than Dentists

Numerous studies have been conducted which show the impact of dental health personnel other than dentists providing services in reducing the cost of provision of dental services (Lobene, 1979; Hankin, 1977; Tan, 1977). Part of the original rationale for the development of dental hygiene was that dental hygienists could provide services equal in quality to those provided by dentists at lower unit cost. Studies have shown the economic advantage to dentists of employing dental hygienists. Fewer studies have been conducted concerning the economic impact of the regulation of dental health personnel other than dentists (ADA, 1976; Scarrott, 1973; Mullins et al, 1979). The standard rationale for licensure is that the regulation of dental professionals is necessary in view of the inability of the consumer to assess the quality of most dental services and the related costs correctly (Littleton, 1982). Regulation of professionals is intended to assure consumers that they will be able to obtain services of uniform quality in a given area. Other effects of regulation, however, may be a closed market and reduced mobility of providers which produce higher costs of services. Born (1983) maintains that cost-containment of dental health services could be achieved through greater use of non-dentist dental personnel with widespread changes in the way dental health care is delivered. Lipscomb (1982) points out that few valid studies have dealt with the effect on costs of the regulation of dental health personnel other than dentists. Instead, attention has focused on the impact of these personnel on the delivery of services.

Policies designed to increase the access of the public to care by dental hygienists through changes in regulations may in some way help to contain costs. For this to occur however, there must be substitution of a less expensive input (dental hygienist) for a more expensive input (dentist). It is difficult to determine how the present regulation of dental health personnel other than dentists affects dental costs. The question is complex, and would benefit from a well-designed study using models of dental health care delivery with different regulatory restrictions for dental hygienists and other non-dentist providers. At present, there appear to be few advocates for such innovative approaches (Born 1983).

Scheffman and Appelbaum (1982) suggest that the current regulation of the profession does not necessarily improve the quality of the services offered. They venture to say that the establishment of certain constraints - for example, the issuing of licences to practise and the exclusive nature of activities - may lessen the quality of services and increase costs. They base their conclusions in part on studies comparing the provision of certain services by dentists and other personnel, namely amalgam or resin restorations and fitting of stainless steel crowns. These studies show the quality of services rendered by other providers to be equal or superior to those offered by dentists. They conclude the following:

> "The constraints imposed in the case of the dentists increase their opportunity cost of time and thus reduce their per unit time input, which in turn lowers the quality of their service. The dentists themselves may be more qualified, but in view of their opportunity costs, it appears that they cannot afford to provide higher quality service" (Scheffman and Appelbaum, 1982).

The authors also conclude that provision of certain dental health services by dental non-dentist providers in supervised and unsupervised situations would increase access to dental health care for certain routine, quality services at lower costs.

The emergence of the independently-functioning dental hygienists is directly related to government policies. Present policies do not support independent dental hygiene practice. Nevertheless, one hypothesis is that the introduction of

such a dental health professional on the labour market would increase accessibility to dental health services, since groups that do not presently seek regular dental health care might become their clients. In turn this might result in an increase in dentists' practices through increased case finding since this new professional would not offer specialized services which are solely the dentist's responsibility (Evans and Williamson, 1978). Regarding the situation where dental hygienists work for dentists, Lipscomb (1982) suggests that if the dental services market were purely competitive,, deregulation could lead to lower costs. If, instead, the market operates like a non-competitive cartel, the increase or decrease in costs will depend on a decision by the dental profession. It could cut prices or, conversely, retain the increased profits obtained by having non-dentist personnel provide services.

4. Public Policy and Legislation

Legislation may be seen as one reflection of public policy. Existing legislation is, of course, a major influence on dental hygiene practice, since it defines dental hygiene functions and regulates who may practise and under which circumstances. Differences in legislation and regulations among the ten provinces and two territories have sometimes been lamented. However, the existing system of provincial-territorial regulation provides the opportunity for implementing variations and innovations which would likely not happen if nation-wide consensus were required. Examples of this are certain restorative, orthodontic, periodontal and local anesthesia functions for dental hygienists which exist in some provinces but not in others.

As discussed in Chapter V, regulation of dental hygienists in Canada in comparison with other health professionals such as physiotherapists and dental therapists is restrictive; it is unusual for licensed health professionals to be required to work under the level of supervision usually required of dental hygienists. This restriction frequently prevents dental hygienists from working in many settings such as long-term care homes and hospitals where they could provide valuable services.

Publicly-funded dental health care programs employ non-dentist dental health personnel without on-site supervision by dentists. Where government policy decisions entail changes in the traditional (private practice, fee-for-service) arrangements for provision of dental health care, they have generally met with resistance from organized dentistry (Thompson, 1973).

There is particular concern about restricted access to dental hygiene services for institutionalized persons, such as those in chronic care homes and hospitals, because of present requirements for a high level of supervision. Such requirements are seen to be out-of-date, unreasonable and adversely affecting the delivery of needed care (Monteith 1984). Supervision requirements also prevent dental hygienists from providing dental health services in geographic areas underserved by dentists.

Richmond and Kotelchuk (1983) have presented a model which relates various influences on public policy. This model is presented in Figure 8.1. As applied to dental health, the knowledge base in this model includes both research findings and analysis of experience with existing situations; social strategy refers to a plan (or plans) of action; political will reflects the will of decision makers (influenced by consumers, dental health professionals, and other stake holders) to act on an issue; public policy is the resultant course of action. This model can be used to view many issues in dental health. In 1980, in the United States, the question of public policy options for better dental health was addressed by the Institute of Medicine and a summary was published (Rice et al, 1981). Using benefits to dental health as the primary criterion for evaluating possible dental health plans, the report recommended the highest priority for a school-based public program of preventive services for children, the services being provided by dental hygienists and dental assistants. Adoption of such a recommendation would have a marked effect on dental hygiene in the United States.

Similarly, the introduction of a new public health act by the Ontario Minister of Health in July 1984, which includes preventive dentistry

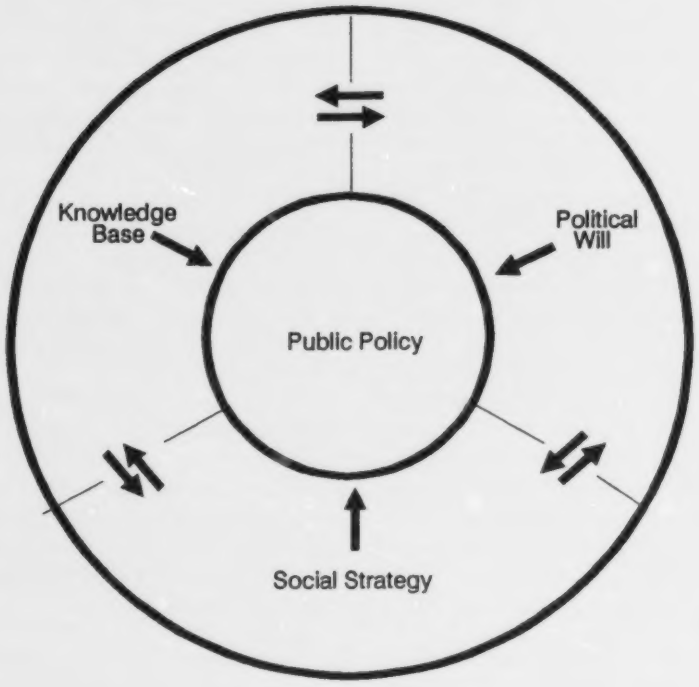

Figure 8.1 Development of Public Policy

as one of a set of seven standard services (CDA, 1982) may influence regulations in that province regarding supervision and responsibilities of dental hygienists, because many of the preventive dental health services can be provided by dental hygienists. Future policy decisions concerning provision of dental health services for the elderly may have similar influences. When governments become heavily involved in the provision of labour-intensive health services such as dental health care, more attention may be paid to having such services provided by those who have the lowest level of necessary training compatible with the highest standards of care, in order to reduce program costs.

General policy decisions or recommendations (as compared to specific dental care policy) will also find application in the field of dental health. Several references in Reforming Regulation, a report prepared by the Economic Council of Canada (1981) are applicable to the relationship between dentistry and dental hygiene. Thus:

> "No statute or regulation should confer on the members of one regulated occupation the power to regulate another occupation."

and:

> "We recommend that governments systematically and thoroughly review their existing body of occupational regulation and proposed legislation to ensure that the least restrictive form of regulation consistent with the protection of the public interest has been chosen."

The Canadian public, as consumers, may influence both the political will and social strategy sectors of the public policy model. A widespread perception of the public is that the cost of dental care is too high (ADA, 1983), that present delivery systems only satisfy the demands of the affluent, and that services from the public sector are too limited in their availability (Davies, 1980). Canadians have become better educated over the past decade, and this may increase demand for dental services. Where services can be provided by either the dentist or dental hygienist consumers may, in some instances, indicate the dental hygienist as the provider of choice (Darby, 1981; Angevine, 1973; ADHA, 1983). However, Gilmore et al (1976) found that the consumer is more concerned with the actual procedure itself rather than the person performing it. Consumer associations are strong advocates of increased access to health care and disease prevention (Rubino, 1983). In these respects their interests coincide with those of dental hygiene. Strong consumer advocacy is rarely mobilized on dental health issues, but it can be influential. A strong positive public response is thought to be the primary reason that the children's dental health program in Manitoba was not drastically reduced, terminated or the mode of delivery of care totally changed (Plett, 1987) when there was a change in provincial government in 1979. Organizations representing dental health care providers are exhibiting increased awareness of consumers' concerns (ADA, 1981; ADA, 1983; ADHA, 1983).

5. Relationships with Other Dental Health Personnel

Dentists

Relationships with dentistry are of paramount importance to dental hygiene. These relationships may be generally classified under the headings regulation, employment and professional associations.

Regulation

In most provinces the dental profession still regulates dental hygiene. At present, only in Quebec is dental hygiene a self-regulating profession. In March, 1987 Ontario dental hygienists were granted self-governing status. In other provinces representation of dental hygienists on the bodies which regulate them is either lacking or minimal. Efforts are being made by dental hygienists in Alberta and Manitoba to establish an alternative to regulation by dentists. In several provinces dental hygienists do not have dental hygiene representation on the boards which regulate them. In no province where dental hygienists are licensed by a dental board is representation on the licensing board proportional to the number of dental hygienists and dentists licensed (See Chapter V).

Employment

The overwhelming majority of Canadian dental hygienists is employed in private dental practice. In fact, the proportion of dental hygienists employed by individual or groups of dentists has increased from 61 per cent in 1965 to 82.4 per cent in 1981 (Chapter VII). In most dental practices, dental hygienists do not have any dental hygiene colleagues in their work place. Because of the recent rapid growth in dental hygiene programs, frequently the dental hygienist and employing dentist will both initially lack experience in the dentist-employer/dental hygienist-employee roles. The situation is further exacerbated by the lack of preparation of dentists while they are students in learning effective personnel management techniques and practices and gaining practical experience in working with dental hygienists. The shift of dental hygiene education to community colleges further contributes to this problem. Recently dental hygiene organizations have been more vocal in expressing concerns over employer/employee issues, and several continuing education programs have been held to acquaint hygienists with labour and human rights legislation that affects them in their workplace.

The American Dental Association, Special Committee on Dental Hygiene (ADA, 1982) identified several unfair and unsound employment practices as well as problems with interpersonal relationships, as being major problems in the United States. Although a

parallel study has not been undertaken in Canada, some efforts to prevent or ameliorate employment-related problems are known to exist. For example, in British Columbia, the College of Dental Surgeons has established an Auxiliary Benefits Committee, and circulated to its members reports explaining legal requirements concerning holidays, insurance, pension benefits (Kline, 1982). The report also contains recommendations concerning salaries and possible non-compulsory benefits. The Canadian Dental Hygienists' Association has prepared a similar report, as have some provincial dental hygiene associations.

Professional Associations

Although not directly involved with dental hygiene licensure, the Canadian Dental Association is very influential in some aspects of dental hygiene education and practice. The Canadian Dental Association through its Council on Education is the recognized national accrediting agency for dental hygiene education programs. In addition, the Council on Health Care is the CDA body which recommends policy concerning non-dentist personnel to the CDA Board of Governors. Since most constituent associations of the Canadian Dental Association tend to adhere to such policy, the Council on Health Care also has a great influence on dental hygiene. The Canadian Dental Hygienists' Association has voting representation on these two Councils, as does the Canadian Dental Assistants' Association. There is considerable merit in the suggestion that the Canadian Dental Association and the Canadian Dental Hygienists' Association should have reciprocal representation on committees of the organizations which deal with issues of mutual concern. Even more desirable would be the establishment of a separate advisory body, with equal representation from national professional organizations for dentistry, dental hygiene, dental assisting and dental therapy as well as other health professions. Such a body would provide a forum for discussion of matters of mutual concern, and would have the advantage of not being directly controlled by one of the parent professional groups.

Examples of cooperation between dental and dental hygiene associations at the national and provincial levels are plentiful. The executive directors of the Canadian Dental Hygienists' Association and the Canadian Dental Association maintain a cordial informal liaison. Annual national meetings of the two organizations are held simultaneously in the same city, and much of the planning of arrangements and social activities are shared. At the provincial level, dental hygienists frequently serve on committees of provincial dental associations. Their status on these committees varies: in some cases the dental hygienist may be a voting member, in others not. In at least one instance, the British Columbia Auxiliary Education Committee, there was a dental hygienist chairperson. Frequently provincial dental and dental hygiene associations jointly plan and conduct annual conventions. Usually there is collaboration on dental health promotion projects such as Dental Health Month. In some provinces, the respective associations cooperate in planning and conducting continuing education programs for dentists and dental hygienists.

The categories of relationships discussed above should not be considered to be exhaustive. Other instances, such as dentists and dental hygienists serving on advisory committees of community college programs in dental assisting and dental hygiene, can be found. Also, there are many employment situations, such as in community health, where the employment relationship between the dental hygienist and the dentist is not one of employer/employee. In situations which are not encumbered by the structural constraints of employer/employee and regulator/regulated situations, a more clear appreciation of the potential collegial relationship between dentists and dental hygienists frequently emerges. Darby (1983) has described how this more collegial relationship can apply in the delivery of dental health services in private practice. She cites the basis of collaborative care as integrating the respective care regimens by the dentist and the dental hygienist to ensure quality patient care. Dental hygienists would be considered knowledgeable about their field and responsible for the patient's dental hygiene care, while dentists would continue to be responsible for the

patient's overall dental care. This model recognizes that the dental hygienist is the only dental health professional educated primarily to provide preventive dental care to the public.

Future Relationship between Dentistry and Dental Hygiene

In spite of some understandable strains between dentistry and dental hygiene, caused at least in part by growing professional aspirations of dental hygiene, the role of dental hygienists in health care will remain closely linked with dentistry. The interests of both groups and of the public will be best served by continuing and effective collaboration between dentistry and dental hygiene. Some suggestions for changes in the traditional relationship between the two groups have been made. Examples are greater regulatory autonomy for dental hygiene, more flexible working arrangements and functions, less stringent requirements for supervision and greater recognition of the existing and potential contribution of dental hygienists to improvement of the dental health of Canadians.

Other Dental Health Personnel

The relationship between dental hygiene and other dental health personnel is less clear. On a formal level, a liaison committee was established in 1976 (CDHA, 1976) between national dental hygiene, dental therapy and dental assisting organizations in order to establish and maintain better communication among the three groups. In one province (Manitoba) the three groups work closely together to influence changes in legislation. Dental hygienists and dental assistants in British Columbia have observer status on each other's boards and work together on many committees. There is no formal association between dental hygiene organizations and either dental technicians or, where they exist, denture therapists. A structural relationship between dental assisting and dental hygiene education in Ontario was imposed in 1977 when the Ministry of Education determined that dental hygiene education would consist of one academic year added to the basic one year dental assisting programs. Some of the problems ensuing from this perception of the dental hygienist as an up-graded dental assistant have been dealt with in Chapter IV.

Dental therapists and dental hygienists have many comparable components in their educational programs. In Saskatchewan (1976) dental hygiene graduates from the University of Manitoba took one academic year of additional educational preparation at Wascana Institute to complete an educational program in dental therapy. Dental therapists may complete accredited dental hygiene programs in Manitoba and Saskatchewan with one year of additional education. This situation has resulted in a number of practitioners who are educationally prepared and eligible for licensure as both dental hygienists and dental therapists. The resulting skill package is comparable to the experimental expanded-duty dental hygiene programs introduced in Boston (Lobene, 1979) and Kentucky (Spohn and Mast, 1975) in the 1970s. The versatility of such individuals in preventive and restorative functions has been acclaimed by dentist-employers, especially in rural practices in Saskatchewan and Manitoba, and also in some public health contexts. Dually qualified practitioners report a high level of satisfaction with increased responsibilities and variety of work.

6. Relationship with Other Health Professionals

Although there are numerous examples of cooperation between dental hygienists and other health professionals, these reflect ad hoc efforts rather than an attempt at a formally organized approach. There can be no doubt that the recognition of opportunities for different health professions to collaborate is increasing. Some examples of collaboration with other health professionals include: health education and health promotion projects; working with occupational therapists regarding oral hygiene procedures for the physically handicapped; joining with nutritionists for nutrition week fairs and other public information projects; working with public health nurses to integrate preventive dental care into general preventive care for selected target groups;

participating in prenatal education programs; and working in multidisciplinary programs for seniors.

There is growing recognition that preventive health care can be most effective by using an integrated, multi-disciplinary, community-based approach (Lussier, 1982). The role of dental hygiene in such an approach needs further study and development. In particular, a systematic study of how preventive dental care can be integrated with other health services oriented to health promotion would seem timely.

7. Socialization

Dental hygiene has been greatly influenced by the fact that it is a profession composed almost entirely of women, usually working under the direction of dentistry, a profession composed primarily of men. In 1979, 97.2 per cent of dental hygienists in Canada were female (Lewis, 1981). When dental hygiene was first developed it was legally defined that the occupation be limited to women, as they were more patient, less aggressive, and subservient (Jones, 1979). Dr. Alfred Fones, called the father of dental hygiene, favoured incorporating women in the practice of dental hygiene and suggested that "... a woman is willing to confine her energy and skill to this form of treatment...is apt to be conscientious and painstaking in her work...honest and reliable..." (Morley, 1972). Until recent years, many provinces and states restricted dental hygiene practice to women only. This sex discrimination in a health profession was almost unique (McFarlane, 1964). Revised legislation of the last two decades has removed these discriminatory regulations, with the province of Prince Edward Island being the exception, but the stereotype of the dental hygienist as a young woman remains. These and other examples provide evidence of sexual stereotyping in the origin and history of dental hygiene.

Early socialization affects both men and women throughout life because socialization is the very process through which social values and expectations are transmitted from one generation to another. Traditionally, women in our society have been socialized to be passive, dependent and nurturing. Women's aspirations and career options have accordingly been limited to those which have been deemed appropriate either by themselves or others (Muff, 1982; Lasky, 1982; Rosenow, 1982 and Schwerin, 1974).

The origin of dental hygiene and the influence of socialization on both dental hygienists and dentists, together with the employment and regulatory control of dental hygienists by dentists in most jurisdictions, has produced and perpetuated a paternalistic relationship between dentistry and dental hygiene. There is an obvious need for eliminating the image of dental hygiene as exclusively for women in recruiting new members to the profession. It is generally recognized by dental hygienists that the range of services they perform has been determined by the dental profession rather than either the dental hygiene profession or the dental health needs of the public (Jones, 1979).

The women's movement was influential in bringing into focus cultural and social influences which adversely limit the contribution to health care by provider groups traditionally labelled as female. The changing relationship between men and women has provided impetus to the aspirations of emerging health professions, which seek to be more autonomous in regulation, to be seen as making distinct contributions to health, and to achieve higher status than previously rigid hierarchical perspectives based largely on sex differences allowed. "... by dropping sexual type-casting from role titles, it should be clear that each member of today's dental service delivery team should operate in a hierarchy based upon training and merit" (Hamilton and Hamilton, 1980).

8. Growing Professionalism

There has been considerable debate over the past decade about the status of dental hygiene as a profession (Jones, 1979; Stamm, 1982; Darby, 1982). From the viewpoint of sociological definitions which have been widely accepted (Jones, 1979) dental hygiene has been sometimes described as a semi-profession. Certainly, there has been a growing reaction among many dental

hygienists in Canada and elsewhere against the adverse effect of being labelled dental auxiliaries since the term "auxiliary" usually connotes "helper". The conviction is established among dental hygiene educators, dental hygiene association leaders and others, that dental hygiene is a discipline qualitatively different from dentistry and not simply quantitatively different; that is, dental hygienists are not primarily "dentist extenders" but fill a unique role because of their primary orientation to the prevention of oral disease and maintenance of oral health.

Definitions notwithstanding, dental hygiene in Canada and the United States exhibits many of the characteristics associated with an increasing group of occupations - many of them health related, referred to as emerging professions (Trebilcock, Tuohy and Wolfson, 1979; Dussault, 1976; Wilinsky, 1984). Professionalization is a dynamic process whereby certain characteristics change the direction of a profession. These characteristics include developing educational standards and practice standards, participation in research, desire for a greater degree of self-regulation, and the identification of dental hygiene as a process of care rather than a list of functions. This emerging professionalization has been led largely by a group active in dental hygiene education and dental hygiene associations.

The unofficial position of several provincial governments, also expressed in a report of the Economic Council of Canada (1981), that one occupational group not regulate another has prompted a following by Ontario of Quebec's lead, where dentists do not regulate dental hygienists and where dental hygiene is recognized as a profession under the Code des Professions du Québec. This development, perhaps more than any other single factor, enhances the perception by dental hygiene itself and others that dental hygiene is a profession.

The grouping together of several health occupations, including dental hygiene, under the designation of allied health professions for a period of time became more common. Workshops and other gatherings dealt with issues common to the included occupation. Sometimes groupings are made for the purpose of creating a coherent approach to legislation and regulation (as in Alberta's Health Discipline's Act). The allied health phenomenon has been primarily visible in the United States.

Other instances of growing professionalism of dental hygiene can be found in Canada: presentation by the Canadian Dental Hygienists' Association of its own briefs to government bodies such as the Ad Hoc Committee on Dental Auxiliaries in 1970, the Health Services Review in 1979; and the Federal/Provincial Advisory Committee on Health Manpower in 1983; initiatives by provincial dental hygiene associations in Manitoba, Ontario, and Alberta to produce changes in regulation and legislation; the growing interest and participation of dental hygienists in research; the establishment of practice standards and the recognized professional status of dental hygiene in Quebec.

9. Professional Satisfaction

Few studies exist which deal specifically with professional satisfaction of dental hygienists in Canada. Lewis (1981) surveyed dental hygienists in Canada and found that 48.4 per cent of the respondents employed as dental hygienists were very satisfied with their careers; 38.2 per cent somewhat satisfied, 11.2 per cent somewhat dissatisfied, and 2.3 per cent very dissatisfied. Dissatisfaction was lowest in New Brunswick, 6 per cent, Prince Edward Island, 9.7 per cent and Ontario, 9.8 per cent. It was highest in Quebec, 18.9 per cent and British Columbia, 18.6 per cent. In the remaining provinces, dissatisfaction ranged between 13 and 16 per cent. Information on factors which influence this level of satisfaction and dissatisfaction is not currently available.

The Lewis survey indicated that dental hygienists' future work plans are strongly related to satisfaction with their dental hygiene careers. Seventy-one per cent of respondents employed in dental hygiene in 1979 planned to continue their career in the future. Of the 26 per cent who were uncertain about their future plans - 30 per cent were dissatisfied with their dental

hygiene career. Of the three per cent who did not plan to continue, 61 per cent were dissatisfied.

Studies on job satisfaction of dental hygienists in private practice have been reported primarily in the American literature. Factors which may influence career satisfaction include content of the job, pay and promotion, job environment, working conditions, interpersonal relationships, and issues related to professional freedom (Heine et al, 1983; McAdams, 1976; Pitchford et al, 1980; Levin, 1980; Farrugia, 1984; Deckard and Rountree, 1984).

The overall rating by dental hygienists of their profession is very positive. The degree of satisfaction is generally high for aspects of the job related to job performance itself - a feeling of accomplishment and service, relationship with co-workers and the relatively independent work situation (Lawson and Martinoff, 1980). The least satisfying aspects are the limited clinical services the dental hygienist can perform, absence of opportunities for professional advancement, lack of employment benefits and job stability, and relationships with dentists (Lawson and Martinoff, 1980). Job satisfaction is higher for those who can perform additional functions (Lawson and Martinoff, 1980; Hunter and Rossman, 1979; McAdams, 1976).

Financial security and job stability contribute to job satisfaction. Sick leave, vacation leave, life and health insurance and pension plans are available to dental hygienists employed by industry, educational institutions and government agencies. The majority of private practice employers have not provided comparable employee benefits except for vacation leave which is mandated by law.

Several concerns identified in the literature appear to be applicable to Canadian as well as American dental hygienists. Many issues of mutual concern to dental hygienists and dentists emerged from the hearings of a special committee of the American Dental Association struck in 1981 (ADHA, 1982). Economic issues related to job security include: employment being dependent upon the busyness of the dentist(s), not just demand for dental hygiene services; lack of employment agreements; sudden termination; and instabilities related to part-time employment. The latter issue is less applicable in Canada than the United States because there is less part-time employment. Other economic issues relate to forced part-time status in order to exclude eligibility for benefits such as insurance and pension where these exist, lack of work review mechanisms, excess dentist profit margin on dental hygiene services, and salaries not keeping pace with inflation.

Concerns relating to professional growth and career opportunities include under-use of skills, restrictions on potential employment settings - for example, nursing homes, hospitals, mobile clinics - because of stringent supervision requirements and other practice act restrictions. Licensure concerns include control by the dentist of dental hygiene regulatory boards, and lack of employment mobility. Lack of opportunity for advancement, ethical dilemmas, the pressure for production versus the quality of care, and the absence of established performance standards are other expressed concerns.

Levels of professional satisfaction and the factors which influence them should be monitored periodically. Where appropriate, issues identified through such monitoring should be discussed within dental hygiene organizations and in broader forums such as the proposed multipartite advisory committee.

10. Research

Research on questions concerning the dental health of Canadians may play a decisive role in the future of dental hygiene. There is an obvious need for more research in such areas as the epidemiology of dental diseases, methods of preventing dental diseases, factors affecting the use of preventive measures, cost-effectiveness of preventive measures, different human resources configurations in dental health care, and innovations in delivery systems for dental health care. A multitude of research questions important to dental hygiene practice and development of the profession were identified at the Canadian Conference on Dental Hygiene

Research (Health and Welfare Canada, 1982) and the American National Agenda on Dental Hygiene Research (1984). Dental hygienists will be among both the investigators and beneficiaries of such research. The Canadian Dental Hygienists' Association has demonstrated its interest and support for research by providing funds for the Conference on Dental Hygiene Research, and supporting research projects such as the human resources studies by D.W. Lewis.

Nevertheless, it would be unrealistic to assume that research findings which do or may indicate the possibility or advisability of a greater role for dental hygienists in the provision of health care will automatically result in such changes. A large number of well-designed research studies in the 1970s, for example, amply illustrated that dental hygienists and other dental health personnel besides the dentist can perform many procedures normally restricted to dentists and to a standard of quality and safety equal to dentists (Abramowitz and Berg, 1973; Lobene, 1979; Lewis, 1978). The corresponding changes in regulation and practice have not followed to an appreciable degree. It must be recognized that research data are only one component of the decision-making process leading to changes in delivery of dental care. Research in matters related to dental health care contribute to the knowledge base, but political will and strategies - plans of action - are necessary before policies are changed or implemented.

11. Practice Standards, Competence Assurance and Quality of Care Assurance

The terms quality assurance, competence assurance, and practice standards all reflect a concern relating to the practitioner's ability and performance at a level which compares favourably with established standards. Competence assurance is the certainty with which practitioners can identify throughout their career their ability to carry out the responsibilities of their profession. Quality assurance is the assessment or measurement of the quality of care and the implementation of any necessary changes to either maintain or improve the quality of care. The measurement is made in relation to an established standard, which describes the desired and achievable level of performance. Quality assurance, therefore, includes the concepts of competence assurance and defined practice standards. In its concern to assure quality of dental hygiene care, the dental hygiene profession in Canada has placed a priority on the establishment of practice standards.

Virtually all health professions in recent years have come to realize the need for practice standards. This realization has been the result of several factors: individual practitioners' desire to evaluate and improve their own performance; consumers' interest in accountability in health care; research advances in evaluating quality of care; professional organizations' wish to ensure high levels of care by their members and to avoid government-imposed standards of care; and the growth of peer review procedures.

Every dental hygienist has personal, implicit practice standards which, together with the competence level possessed by the dental hygienist, determine the quality of care provided. Two difficulties are inherent in this situation. One difficulty is that the standards are implicit and would be clearer to all concerned if they were made explicit. The second difficulty is that many dental hygienists work in situations where they are isolated from other dental hygienists and therefore have few opportunities to observe, compare, discuss, and modify their individual standards of practice.

Practice standards are central to consideration of quality of care, and their definition is usually considered to be a necessary first step in assuring both the quality of care and continuing competency of practitioners. The Working Group on the Practice of Dental Hygiene recognized that this task requires a level of expertise and a commitment of time which its members were not able to provide. The Working Group therefore recommended to the Department of National Health and Welfare that the Advisory Committee on the Development of Clinical Practice Standards for Dental Hygienists be established which, with the assistance of a researcher on contract, has developed clinical practice standards for dental

hygienists and will make recommendations for further activities relating to competency assurance for dental hygiene practitioners and quality assurance for dental hygiene care. An article discussing definitions, issues and directions for dental hygiene quality assurance in Canada, written under the auspices of the Advisory Committee has been published in The Canadian Dental Hygienist (Pimlott et al, 1985). The final report of the Advisory Committee on the Development of Clinical Practice Standards for Dental Hygienists will be published as Part Two of the Report of the Working Group on the Practice of Dental Hygiene.

12. Worldwide Developments in Dental Hygiene

Since its inception in the early 1900s in the North-East part of the United States, dental hygiene has spread to many parts of the world. The United States, Japan, and Canada rank in that order in the number of dental hygienists. Dental hygiene is recognized in more than fifty countries representing all continents (Fédération dentaire internationale, 1981).

Evidence of the international nature of dental hygiene was acknowledged by the establishment of the International Dental Hygiene Liaison Committee of which the Canadian Dental Hygienists' Association was a founding member. The Committee has organized ten biennial symposia on dental hygiene, the seventh of which was held in Vancouver, British Columbia in 1979. Developing from the International Dental Hygiene Liaison Committee, the International Dental Hygienists' Federation was established in 1986. Two Canadian dental hygienists are members of the initial executive. The eleventh international dental hygiene symposium will be held in Ottawa in 1989. Further information is presented in Chapter II History, 5. Landmark Events.

The foreign country with the greatest influence on dental hygiene in Canada is the United States. This is not surprising for several reasons: many early Canadian dental hygienists were educated in the United States; close relationships exist between dentistry and dental hygiene in the two countries; and early dental hygiene education programs in Canada were patterned after programs in the United States. Many developments in dental hygiene in Canada have been preceded or accompanied by similar events in the United States and therefore it is logical that Canadians have considerable interest in American professional developments. One such development is the suggestion that dental hygienists should be able to practise independently of dentists, an idea which emerged during the late 1970s (Born, 1983). This was also a period when increasing numbers of American dental hygienists were graduating from fouryear degree programs (in comparison with two-year diploma programs), and the women's movement was generally leading to increased career aspirations for women. For the near future at least, independent contracting appears a much more likely development than independent practice.

There are a few examples in the United States of new types of dental hygiene employment settings that may prove influential in Canada: workplace clinics, retail centre dental offices, prevention centres. Also, the successful establishment of several independent contracting arrangements between dental hygienists and dentists may provide models attractive to many Canadian dentists and dental hygienists, while at the same time retaining relationships between dental hygiene and dentistry.

Although dental hygiene in Canada is influenced by developments in the United States, it is also affected by dental health policies on a broader international scene. International goals for dental health forecast increased importance for preventive dental health and thus for dental hygiene. Global goals for oral health proposed by the World Health Organization and the Fédération dentaire internationale (Aggeryd, 1983) are receiving considerable scrutiny in view of the changes in oral health status. The WHO goal is oral health for all in the year 2000; the first global indicator of oral health status is an average of not more than three decayed, missing, and filled permanent teeth at the age of twelve by the year 2000. It is suggested that each country use this indicator as a guide in formulating its own national and regional goals. The FDI have further defined

six goals for oral health in the year 2000. These are:

1. 50 per cent of five-to-six-year-olds caries free;

2. a global average of no more than three DMF teeth at 12 years of age;

3. 85 per cent of the population retaining all their teeth at 18 years of age;

4. 50 per cent reduction in 1983 levels of edentulousness for those 35-44 years;

5. 25 per cent reduction in 1983 levels of edentulousness for those 65 years and over;

6. establishment of a data-based system for monitoring changes in oral health (Aggeryd, 1983).

Several authors suggest caution concerning these goals (Ainamo, 1983; Barmes, 1983; Greene, 1983; Sundberg, 1983):

- There is a paucity of data for all dental caries indicators except for that at the 12 years of age level, affirming the need to build up a data base at national and international levels.

- Recent evidence of declining dental caries prevalence in industrialized nations suggests that these countries may meet or surpass FDI goals by the year 2000, but that sustained efforts in both public and private sectors will be required to maintain the trends. For example, strong efforts to promote community water fluoridation must continue.

- Dental diseases other than dental caries - periodontal disorders, malocclusions, and oral malignancies - are in need of epidemiological research and reliable indicators.

- Dental care must become oriented to prevention rather than primarily oriented to treatment.

- Expanded utilization of dental health care personnel other than the dentist is necessary.

The extent to which various countries and organizations commit resources to international goals in dental health will influence dental health policies in each of the countries concerned.

13. Conclusions

Ideally, Canada should be moving toward a system of dental health care that will provide access by all Canadians to the services which they require. In doing so, the primary criterion for decision making should be improved dental health status. In reality, economic, social, and political factors will strongly influence developments, including the determination of the roles that dental hygienists will assume in the evolving dental health care system.

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IX

DISCUSSION AND IMPLICATIONS FOR THE FUTURE

This report has described the development and major characteristics of the dental hygiene profession in Canada. The findings provide the basis for an additional project: the development of clinical practice standards. The findings also have implications for the future, be it for program planning or for oral health outcomes. This chapter will briefly summarize the findings and highlight major implications.

Dental hygiene began in Canada about four decades after its origin in the United States. Much of its early development was related to public health efforts in preventive dentistry, but dental hygiene quickly became established in private dental practice as well. Until the early 1960s there was only one Canadian dental hygiene education program, that of the University of Toronto. During the 1960s, four more university-based dental hygiene education programs began across Canada, and consequently the numbers of graduating and practicing hygienists increased. In the 1970s, the establishment of many community-college programs in both Ontario and Quebec produced an almost exponential growth in the number of dental hygienists. As a result in the mid 1980s there is a workforce of more than six thousand dental hygienists in Canada, most of whom are under 30 and are graduates of community college, rather than university programs. Although three universities have two-year diploma programs, only two baccalaureate degree programs exist at the University of Toronto and University of Montreal. There is clear indication of the need for a degree program in western Canada, and studies to ascertain the need for additional (or expansion of existing) degree programs in eastern Canada should be undertaken.

In spite of the basic preparation for practice being a two-year diploma program and the few opportunities for degree studies in dental hygiene, many dental hygienists continue formal studies leading to a degree in some discipline. They also exhibit relatively high participation rates in continuing education. There are potentially diverse and rapidly-developing roles for dental hygienists, many of which correspond to the different emerging needs for preventive dental health services. For these reasons, there is a need for a more systematic approach to continuing education for dental hygienists, utilizing techniques developed by the discipline of adult education for needs assessment, setting goals, defining objectives, conducting programs, and evaluating results. The Canadian Dental Hygienists' Association is providing leadership in this area. Increased responsibilities for continuing education should also become an integral part of all dental hygiene education programs.

At present, some of the most pressing questions concerning dental hygiene relate to human resource requirements. How many dental hygienists are needed in Canada? What criteria and methods should be used to derive such target figures? How reliable are forecasting techniques in the field of human resources? Who should participate in forecasting? Many of the answers to these and similar questions depend on the respondent's view of dental hygiene. If the dental hygienist is seen as someone with special skills and expertise in preventive dental health services, the answer will be quite different than if the dental hygienist is seen primarily as an assistant to the dentist whose function is to perform routine tasks perceived as appropriate for delegation if and when the dentist is sufficiently busy to warrant it.

Health human resources forecasting is an uncertain science at best, partly because forecasts must be based on assumptions which are frequently shown at some later date to be incorrect. Dental human resources forecasts to date have been prepared almost exclusively by or for dentists, and many of their basic assumptions are open to questions. These assumptions include the static nature of the distribution of dental disease and of demands for dental health services and the supposition that delivery systems and clientele for dental health services will be unchanged. Dental

disease patterns are in fact changing dramatically, with dental caries declining in developed countries and natural teeth being retained longer. Longer retention of natural dentition combined with the demographic phenomenon of an aging population will create increasing needs for periodontal preventive and maintenance services over the next several decades. These are services that can frequently be best and most economically provided by dental hygienists. In the past, the type and amount of work available to dental hygienists has been chiefly determined by private dental practitioners. The increase in third-party dental prepayment plans, either privately funded or government funded, may increase the demand for dental hygienists as dental health care providers. These and other factors suggest that human resources projections should be developed using models more sophisticated than the basic "demand" and "supply" type.

Concerns have been expressed about a present or impending surplus of dental health personnel. In spite of greatly increased numbers of dental hygienists in Ontario and Quebec in recent years, there are no indications that new or former graduates are experiencing difficulty in finding employment with a few exceptions. In the Atlantic provinces, there appears to be a reasonable equilibrium between dental hygienists seeking work and employment opportunities, while overall in western Canada there is evidence of a shortage of dental hygienists. The temptation to close dental hygiene education programs in anticipation of a surplus of dental hygienists should be resisted. If a significant imbalance develops, the "turn-around" time in numbers of graduating students can be very short, since the basic program of preparation for practice is two years.

Another pressing concern is the over-regulation of dental hygienists in some provinces and territories. Advances in the science and art of preventive dental health care, the development of high standards of dental hygiene education and the rapid maturation of dental hygiene as a profession have resulted in existing modes of regulation becoming outdated and unnecessarily restrictive. Although it is understandable historically that dental hygienists originally were regulated under dental practice acts, at this time this mode of regulation should be re-evaluated to better represent dental hygiene interests and issues. The emergence of self-government for the dental hygienists of Ontario will be watched with great interest and support.

One aspect of regulation of dental hygiene which exists in most jurisdictions in Canada and which causes dental hygienists much frustration is the mandatory and restrictive level of supervision by dentists. The requirement for on-site supervision of dental hygienists by dentists severely limits access to preventive health services in such locations as extended care facilities, hospitals, schools, geographic locations where a dental hygienist resides but there is no dentist, and even within the traditional private practice setting. In private practice, direct supervision requirements not only increase costs of dental care, but prevent the exercise of professional judgment by the dentist on this issue. Not only do unreasonable supervision requirements restrict access to preventive services by those who need them and increase the cost of dental health care, but they fail to take into account the low level of risk associated with dental hygiene services, the educational preparation of dental hygienists, and the fact that dental hygienists are licensed health care providers. Health care planners, consumers, and dental hygienists share a common interest in the amendment of present supervision requirements. Many of the functions performed by dental hygienists such as screening, health education, program planning, individualized oral hygiene instruction and care, application of topical fluorides and sealants, and oral prophylaxis, can be performed safely and fully without either intervention or supervision by dentists.

At the national level the primary regulatory issue in dental hygiene at present is portability whereby restrictions between jurisdictions prevent dental hygienists from practising in all provinces and territories. Several approaches are open to ameliorate this situation, including recognition for licensure of graduates of accredited dental hygiene programs, national dental hygiene board examinations, and reciprocal recognition between provinces.

Private dental practice is and will continue to be the predominant practice setting for dental hygienists in Canada. At present, four out of five dental hygienists are employed in private practice. The nature of private dental practice itself is undergoing change: fewer solo arrangements; larger numbers of specialists; innovative marketing approaches. The nature and extent of these changes, together with demand for dental health services in the private sector and the perception of dentists in private practice have concerning the role, abilities, and skills of dental hygienists will be a great influence on both the level of employment and the nature of dental hygiene practice within private practice settings. There is a continuing need for educational programs for student and practicing dentists to enhance their understanding of the training, skills, and roles of dental hygienists. Conversely dental hygiene practitioners have a responsibility to maintain expertise in prevention in private practice and to apply research findings to their practice setting. Courses for this purpose are also required.

Community health settings constitute the second largest group of settings for dental hygiene practice, employing approximately ten per cent of Canadian dental hygienists. The majority of positions are within provincial and regional or local health units. However, in keeping with the definition of community health as encompassing the structures, facilities and patterns of action that the community uses to conserve its collective health, there is a still small, but growing, number of dental hygienists employed in residential facilities for the developmentally retarded, extended care facilities, hospitals, penal institutions, and other similar settings. The roles of dental hygienists in these settings in some jurisdictions are unreasonably limited by regulations requiring high levels of supervision. This is an issue of increasing concern to health care planners, administrators, and consumers, as well as dental hygienists.

Education as a practice setting will continue to attract dental hygienists in sufficient numbers to fill the need, because the nature of the work is appealing to many dental hygienists, and there is more career structure available in most educational settings than in private practice. Absolute numbers of positions in education will probably remain fairly stable in the foreseeable future. This will lead to a relative decline as a percentage of all dental hygiene positions as the general dental hygienist workforce increases. Within the field of education, most dental hygienists are teaching dental hygiene and dental assisting students, but there are now several dental hygienists employed in teaching dental students on a part- or full-time basis.

Additional practice setting opportunities, such as the military, research, dental industry sales and professional liaison, work place clinics, and consulting will probably increase over present levels, but will remain a very small percentage of the total number of dental hygienist positions in Canada. They may have an importance greater than their small numbers indicate in that they enable dental hygienists with professional interests and career aspirations that are not compatible with traditional practice settings to remain in the field of dental health.

The practice alternatives described under "Dental Hygiene Practice Settings" in Chapter VII have recently been the topic of discussion and, in some cases, concern among dentists and dental hygienists in Canada and the United States. It is important to emphasize that none of the alternatives result in the separation of dental hygiene from a close association with dentistry. The close association remains but the nature of the relationship is changed. Independent practice appears to have little general support, although it exists in the State of Colorado. A well-designed research project has been planned in California to investigate its potential. Other alternatives such as independent contracting, designed to maintain close links with dentistry while providing a variety of arrangements for provision of dental hygiene care in the private sector, have gained a higher degree of acceptance in principle. They offer the opportunity to investigate different practice configurations which could provide much more flexibility in providing preventive services through the private sector than is now the case. Several successful examples have existed for a number of years in the United States, and could serve as models for similar developments

in Canada. Their emergence in Canada would require some changes in present regulation. Even when available, they will probably be adopted by relatively few dental hygienists. The traditional practice setting, that is private dental practice, will remain predominant, although increased concern with dental practice marketing, career satisfaction, and motivational factors may lead to a different pattern of employment and regulatory arrangements.

Some of the most influential factors determining the future development of dental hygiene in Canada are demographic and epidemiological. The combination of an older, more affluent, better educated population, and the continuing decline in coronal surface dental caries rates will produce a change in the nature and volume of need for dental health care services in Canada. A great many of the services now provided by dentists are directed to the repair of the short-term or long-term ravages of dental caries. Because the sequelae of caries already experienced by Canadians will require repeated and continuing treatment, the need for restorative dental services will remain high for adults, although it will decrease for children. The overall decline in caries rates together with the shift to a high proportion of older persons in the population, will mean that need for preventive and maintenance dental health services, directed largely toward periodontal health and also to the prevention of root caries, may increase. Dental hygienists are well suited to attend to these needs, both in dental practice settings and in settings intended to increase access to seniors for these services. Such settings include health centres, seniors' activity centres, residential and extended care facilities. These multidisciplinary situations, referred to by the American Dental Hygienists' Association as "field settings", do not require dentist supervision, and present development of such settings for practice is being restricted by existing outmoded regulations on supervision.

Although dentist:population ratios have increased rapidly in recent years, and dental hygienist:population ratios have increased at an even faster rate, there are still pockets of real need for dental care in Canada. Certain population groups, such as the economically disadvantaged, native Canadians, the physically and mentally handicapped, and a high proportion of older adults have low access to dental care at present. While providers of dental health services consider their services to be essential for health, these same services are unavailable to large segments of the population. It is incumbent on providers to actively promote the investigation and initiation of innovative programs to reach those who now need but do not receive dental health services. The potential exists for dental hygienists to be highly involved in the planning, implementation, and evaluation phases of such endeavours.

The perception by dental hygienists of themselves and their profession is changing. This is clear from information gathered from professional organizations and from the recent dental hygiene literature. This changing perception is undoubtedly related to changes in self-perception of women. It will change even further as new generations of dental hygienists are subjected to different patterns of socialization and if efforts to recruit more men into the profession are successful. However, unless these changes are also accompanied by other changes, such as increased recognition, greater scope of practice and self-regulation for dental hygienists, it is likely that the level of satisfaction with dental hygiene as a career will decline.

A key element in changing the status and recognition of dental hygiene might be consumers. The 1983 American Dental Hygienists' Association survey of consumer attitudes and perceptions toward dental hygienists indicated a readiness to see dental hygienists assume a more independent position vis-à-vis dentists than is the case at present. In addition, statements from consumer groups concerning consumers' needs for and right to information regarding preventive health care and adequate access to appropriately priced, quality dental care, reflect the position of many dental hygiene organizations and of individual dental hygienists. In a situation where provision of dental health services is changing from a seller's market to a buyer's market, consumer interests and goals are gaining increased importance.

Most dental health care services are labour intensive and therefore tend to be costly. At present, cost is considered to be the major barrier to access to dental health care. Although all health care costs have experienced sufficient increases in the past two decades to cause national concern, expenditures for dental services have tended to increase at a rate higher than that for health care generally. With some exceptions, attempts to fund dental care services through third-party systems such as tax-supported programs or privately-insured third-party programs have done little to reduce the costs of dental care, in that they have intervened only on the demand side of the dental economic equation. Further investigation of alternative methods to provide services is needed so that reasonable decisions concerning the delivery of dental health care can be made. Numerous studies in the 1970s showed the potential of non-dentist personnel providing many services at lower cost while maintaining quality of service. More studies are needed which, expanding upon these earlier studies, determine the effectiveness and efficiency of different combinations of providers in various settings providing services for selected populations. Theoretically, with dental hygienists providing comprehensive preventive services, dental costs should be lowered by both reducing the need for costly types of care and by substituting dental hygienists for dentists.

Public policy decisions concerning dental health services will shape much of dental hygiene's future in Canada. It is unlikely that Canada will develop a universal dental health care system using taxation revenues, either at the national or provincial level. What appears to be more likely is the continuation of the approach now evident in some provinces: the identification of certain specific groups which have special needs or for whom access to adequate dental health care is grossly inadequate and the attempt to provide some, if not all, necessary services to these groups. The selection of the target groups, the determination of the services to be provided and the choice of how and by whom these services will be delivered will be a most interesting process to follow.

Of course, choices for such programs are not restricted to those models presently in existence in Canada. Adaptation of models from elsewhere in the world has already been accomplished, for example, the children's dental health programs in Manitoba and Saskatchewan. New models may be created, as with expanded-function dental hygienists in the Canadian Armed Forces and the Prince Edward Island Children's Dental Health Program. One model, independent practice in Colorado, is underway and will be watched with interest worldwide.

Canada should be moving toward a system of dental health care which will provide access for all Canadians to the dental health services they require. In doing this, it is hoped that decision-makers will employ as primary criteria the desire to attain optimal oral health status and to improve equity and efficiency. In addition, economic, political, and social influences will be strong factors in shaping developments.

What can be anticipated for dental hygiene as these developments unfold? The Working Group hopes that dentistry and dental hygiene will work in a more collaborative relationship. Dental hygiene regulation may exist apart from dentist-controlled bodies, but include the dentists' input. Mechanisms for changing functions of dental hygienists would accommodate the dentists' need for reassurance that untoward and radical changes would not be imposed upon them, and also dental hygienists' need to know that reasonable changes and growth are not denied. A collaborative relationship between dentists and dental hygienists at individual practice and association levels would be further developed, whereby dental hygiene is recognized as an emerging profession with special expertise in prevention while dentistry retains overall responsibility for patient care. More reasonable supervision requirements will permit dental hygienists to work without the physical presence of a dentist. This, plus increased government awareness of dental health as an integral part of health care, could result in preventive dental health programs, managed by dental hygienists, being instituted in a majority of chronic care institutions, many senior citizens

residence facilities, school clinics, satellite clinics of dental practices, and primary health care centres providing publicly-funded dental services. Groups previously isolated from dental care would have better access to care. Educational facilities for dental hygienists would have proved responsive to human resource needs: the supply of diploma-level dental hygienists and the employment opportunities are in reasonable balance; degree programs would have been established/expanded to accommodate the need for dental hygienists with additional educational preparation to teach dental health personnel, as well as for public health, and research positions. Government policy and program decisions, supported by dental and dental hygiene bodies, could result in an increased emphasis on the prevention of dental diseases as the preferred approach. The dental health of Canadians could improve.

Dental hygiene has made remarkable progress in Canada in its brief history. It is reaching maturation at a time when several powerful influences may affect its further development. There are groups arguing for increased pluralism in provision of dental health services, and increased roles for dental hygienists. If dental health is indeed an essential component of overall health, and if dental hygiene is to serve the dental health needs of Canadians to its best ability, there is need for further change: more dental hygienists educated beyond the basic diploma level; the development of a variety of methods for delivery of care; more emphasis on health promotion and the prevention of dental disease; realistic and reasonable supervision requirements. The Working Group on the Practice of Dental Hygiene believes that, in the long term, most if not all of these changes are inevitable.

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Observer at 1985 meeting
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School of Dental Hygiene
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WINNIPEG, Manitoba

DENTAL HYGIENE EDUCATION PROGRAMS IN CANADA

BRITISH COLUMBIA

Dental Hygiene Program
College of New Caledonia
3330-22nd Avenue
Prince George, B.C.
V2M 4M1

Dental Hygiene Department
Vancouver Community College
Vancouver Vocational Institute
250 West Pender Street
VANCOUVER, British Columbia
V6B 1S9

ALBERTA

Division of Dental Hygiene
Faculty of Dentistry
Dentistry-Pharmacy Centre
University of Alberta
Edmonton, Alberta
T2G 2N8

SASKATCHEWAN

Dental Division[1]
Wascana Institute of Applied Arts and Science
4635 Wascana Parkway
P.O. Box 556
Regina, Saskatchewan
S4P 3A3

MANITOBA

School of Dental Hygiene
Faculty of Dentistry
University of Manitoba
780 Bannatyne Avenue
Winnipeg, Manitoba
R3E 0W3

ONTARIO

Allied Health Programs - Dental
Algonquin College of Applied Arts and Technology
1385 Woodroffe Avenue
Nepean, Ontario
K2G 1V8

Dental Health Programs
Cambrian College of Applied Arts and Technology
1400 Barrydown Road
Sudbury, Ontario
P3A 3V8

Dental Programs
Canadore College of Applied Arts and Technology
P.O. Box 5001
North Bay, Ontario
P1B 8K9

Dental Auxiliary Programs
Confederation College of Applied Arts and Technology
P.O. Box 398,
Postal Station "F"
Thunder Bay, Ontario
P7C 4W1

Dental Health Programs
Durham College of Applied Arts and Technology
P.O. Box 385
Oshawa, Ontario
L1H 7L7

Dental Hygiene
Fanshawe College of Applied Arts and Technology
P.O. Box 4005, Terminal "C"
London, Ontario
N5W 5H1

Allied Health and Community Services Division
George Brown College of Applied Arts and Technology
175 Kendal Avenue
Toronto, Ontario
M5T 2T9

Dental Hygiene
Georgian College of Applied Arts and Technology
825 Memorial Avenue
Orillia, Ontario
L3V 2Y5

Dental Hygiene
Niagara College of Applied Arts and Technology
Woodlawn Campus
Welland, Ontario
L3B 5S2

Dental Health Programs
Seneca College of Applied Arts and Technology
1255 Sheppard Avenue East
Willowdale, Ontario
M2K 1E2

Health Sciences
St. Clair College of Applied Arts and Technology
2000 Talbot Road West
Windsor, Ontario
N9A 6S4

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1 Dental hygiene module for graduate dental therapists only.

Dental Hygiene
Canadian Forces Dental
Sciences School
Base Borden
Borden, Ontario
L0M 1C0

Division of Dental Hygiene[2]
Faculty of Dentistry
University of Toronto
125 Edward Street
Toronto, Ontario
M5G 1G6

QUÉBEC

Programme d'hygiène dentaire
CEGEP Chicoutimi
534 Jacques Cartier Est
Chicoutimi, Québec
G7H 1Z6

Programme d'hygiène dentaire
CEGEP Édouard-Montpetit
945, ch. de Chambly
Ville de Longueuil, Québec
J4H 3N6

Programme d'hygiène dentaire
CEGEP François-Xavier Garneau
1600, boul. de l'Entente
Sillery, Québec
G1T 2S5

Programme d'hygiène dentaire
CEGEP Maisonneuve
2800 est, Sherbrooke
Montréal, Québec
H1X 2A2

Programme d'hygiène dentaire
CEGEP Outaouais
333 boul. Cité des jeunes
C.P. 5220, Succ. "A"
Hull, Québec
J8Y 6M5

Programme d'hygiène dentaire
CEGEP Saint-Hyacinthe
3000 rue Boulé
Saint-Hyacinthe, Québec
J2S 1H9

Programme d'hygiène dentaire
CEGEP Trois-Rivières
3500, rue de Courval
C.P. 97
Trois-Rivières, Québec
G9A 5E6

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P.O. Box 2000
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H9X 3L9

Département de dentisterie
préventive et
communautaire[2]
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Montréal, Québec
H3C 3T9

NOVA SCOTIA

School of Dental Hygiene
Faculty of Dentistry
Dalhousie University
5981 University Avenue
Halifax, Nova Scotia
B3H 3J5

2 Baccalaureate program for graduate dental hygienists only.

TABLE D.1
PROVINCIAL AND TERRITORIAL LICENSING AUTHORITIES FOR DENTAL HYGIENISTS

PROVINCE/TERRITORY	LICENSING AUTHORITY
Newfoundland	Newfoundland Dental Board 211 LeMarchant Road St. John's, Newfoundland A1C 2H5
Prince Edward Island	Dental Association of PEI P.O. Box 1948 Charlottetown, PEI C1A 7N5
Nova Scotia	Provincial Dental Board of Nova Scotia Suite 604 5991 Spring Garden Road Halifax, Nova Scotia B3H 1Y6
New Brunswick	New Brunswick Dental Society 73 Prince William Street Saint John, New Brunswick E2L 2B2
Québec	Corporation professionnelle des hygiénistes dentaires du Québec 5757, Avenue Decelles, Suite 237 Montréal (Québec) H3S 2C3
Ontario	The Royal College of Dental Surgeons of Ontario 230 St. George Street Toronto, Ontario M5R 2N5
Manitoba	Manitoba Dental Association 300-296 Kennedy Street Winnipeg, Manitoba R3B 2M6
Saskatchewan	College of Dental Surgeons of Saskatchewan 109-514 23rd Street East Saskatoon, Saskatchewan S7K 0J8

Alberta	Coordinating Council[1,2] University of Alberta Suite 203 Park Plaza 10611-98th Avenue Edmonton, Alberta T5K 2P7
British Columbia	College of Dental Surgeons of British Columbia 1125 West 8th Avenue Vancouver, British Columbia V6H 3N4
Northwest Territories	Northwest Territories Registrar Professional Licensing Dept. of Public Service Government of the Northwest Territories Yellowknife, NWT X1A 2L9
Yukon	Executive Council Member Consumer, Corporate and Labour Affairs Government of the Yukon Territory P.O. Box 2703 Whitehorse, Yukon Territories Y1A 2C6

[1] Non-Alberta graduates must be certified by this Council.
[2] No licensing body established at the time of writing - to be established by the new legislation body, The Dental Occupations Council.

NATIONAL PROFESSIONAL ASSOCIATIONS

Canadian Dental Hygienists' Association

Headquarters

1320 Carling Avenue
Ottawa, Ontario
K1Z 7K9
(613) 728-8730

Canadian Dental Association

Headquarters

1815 Alta Vista Drive
Ottawa, Ontario
K1G 3Y6
(613) 523-1770

TABLE F.1
SUMMARY OF RESPONSES TO A QUESTIONNAIRE SENT IN LATE 1982 TO SELECTED U.S. STATE LICENSING AUTHORITIES BY THE WORKING GROUP ON THE PRACTICE OF DENTAL HYGIENE RE GENERAL SUPERVISION OF DENTAL HYGIENISTS

Number of state licensing authorities contacted - 13
Number of state licensing authorities responding - 11
Note: Two states surveyed did not have general supervision at the time of writing.
Two states did not respond.
The respective state dental hygienists' association were also contacted and their responses were consistent with those of the licensing authorities.

	Approximate Number of Dental Hygienists	Years of General Supervision	Formal Complaints	Number of Complaints	Discipline of Dentist	Discipline of Dental Hygienist
1.	2,400 (Wisconsin)	several	Yes	not stated	not stated	not stated
2.	735 (Iowa)	5	No	-	-	-
3.	1,100 (Arizona)	2	No	-	-	-
4.	1,150 (Oregon)	2	No	-	-	-
5.	2,400 (Minnesota)	33	No	-	-	-
6.	640 (New Hampshire)	11	No	-	-	-
7.	175 (Alaska)	17	No	-	-	-
8.	2,350 (Washington)	11	Yes	less than 10	not known	0
9.	12,000 (California)	7	No	-	-	-

TABLE F.2
CRITERIA USED IN MAKING GENERAL SUPERVISION DECISIONS:

	State	Criteria Stated
1.	Wisconsin	"A Committee worked on this and studied all available material and pertinent laws in other states. Type of duty performed determined level".
2.	Iowa	No response concerning criteria from licensing agency
3.	Arizona	"(1) That hygienists were subject to licensing examinations. (2) That the level and quality of education allowed it. (3) That preliminary diagnosis and health evaluation of the patient was in the hands of the dentist".
4.	Oregon	"This rule was developed utilizing the input of both the Dental and Dental Hygiene Associations in a cooperative effort with the Board in an attempt to allow the public greater access to dental care providing, however, that the individual receiving hygiene care is a patient of record and has been examined within one year's time by the employer dentist, additionally, no local anesthesia may be utilized by the hygienist under general supervision."
5.	Minnesota	"(A) Training (B) Relation to other services which may only be performed by a dentist. (C) Seriousness of Procedure"
6.	New Hampshire	"Board Committee evaluation of experience of other licensing boards."
7.	Alaska	"1. At least 18 years of age. 2. Graduate of accredited high school; graduate of dental hygiene school which requires at least a two-year course and is accredited by the Commission on Accreditation of Dental and Dental Auxiliary Education Programs of the American Dental Association. 3. Successful completion of National Board of Dental Examinations, written theory examination demonstrating satisfactory theoretical knowledge."
8.	Washington	"Surveys and several open public hearings"
9.	California	Copy of two original documents sent (62 pages, 48 pages)

CANADIAN DENTAL HYGIENISTS' ASSOCIATION DESCRIPTIVE STATEMENTS CONCERNING MODES OF DENTAL HYGIENE PRACTICE AND TYPES OF SUPERVISION

(as approved by CDHA Board of Directors, 1984)

MODES OF DENTAL HYGIENE PRACTICE

The Canadian Dental Hygienists' Association endorses the following definitions for describing the possible modes of dental hygiene practice. These definitions are to be used for reference and discussion purposes only, and in no way are to be considered as the modes of practice endorsed by this association.

a. Traditional

The dental hygienist:
* Works in the same office as the dentist(s);
* Does not pay for his/her own equipment;
* Does not pay for his/her own overhead;
* Does not set or collect fees; and
* Renders services for the dentist.

The dentist is responsible for the dental hygiene services rendered.

b. Independent Contracting

The dental hygienist:
* Works in his/her own office (usually in close proximity to the contracting dentist);
* Pays for his/her own equipment;
* Pays for his/her own office overhead;
* Sets and collects fees;
* Renders services for the contracting dentist; and
* Is responsible for the dental hygiene services rendered.

The dentist is responsible for overall patient care.

c. Dentist Affiliated

The dental hygienist:
* Works in his/her own office (may be remote from the referring dentists);
* Pays for his/her own equipment;
* Pays for his/her own office overhead;
* Sets and collects fees;
* Renders services for a number of referring dentists; and
* Is responsible for the dental hygiene services rendered.

The referring dentists are responsible for overall patient care.

d. Independent Practice

The dental hygienist:
* Works in his/her own office;
* Pays for his/her own equipment;
* Pays the office overhead;
* Sets and collects fees;
* Renders services for patients from any source; and
* Is responsible for the dental hygiene services rendered.

DEFINITIONS

Direct Supervision

A dentist diagnoses and prescribes treatment for a patient and delegates procedures to the hygienist. A dentist is physically available while the dental hygienist delivers treatment.

Indirect Supervision

A dentist diagnoses and prescribes treatment for a patient and delegates procedures to the hygienist. A dentist need not be physically present while the dental hygienist delivers treatment.

General Supervision

A dentist is cognizant of dental hygiene procedures being performed but has not necessarily made a diagnosis.

REFERENCE

Canadian Dental Hygienists' Association.
1984 Official Handbook. Chapter 10, Section C.

REPORTS RELATING TO THE WORKING GROUP ON THE PRACTICE OF DENTAL HYGIENE

1. Proceedings of the Conference on Dental Hygiene Research, the School of Dental Hygiene, University of Manitoba and the Working Group on the Practice of Dental Hygiene, Health and Welfare Canada.

2. Executive Summary and Recommendations, Report of the Working Group on the Practice of Dental Hygiene, Part One.

3. The Practice of Dental Hygiene in Canada - Description, Guidelines and Recommendations, Report of the Working Group on the Practice of Dental Hygiene, Part One.

4. Clinical Practice Standards for Dental Hygienists in Canada, Report of the Working Group on the Practice of Dental Hygiene, Part Two.

The four above-noted reports can be obtained free of charge by writing to the Health Services Directorate, Department of National Health and Welfare, Ottawa, Ontario, Canada, K1A 1B4.